

SUBTASK MEMORANDUM

Task: 1.3 Adequacy and Validity of Meteorological Measurements

Subtask: 1 - Review and summary of existing, recently added and CRPAQS specific meteorological measurements.

3 - Evaluate the spatial representativeness of wind measurements under stagnation conditions.

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SURFACE METEOROLOGY

Tables 1 and 2 (provided at the end of this discussion) present an inventory of surface meteorological data currently available on the Central California Air Quality Studies (CCAQS) database. These inventories concentrate on the winter months (November through February) that are of most interest for CRPAQS. Data in the CCAQS database come from a number of different sources, as indicated in the tables. These sources include:

ARB (AR), 114 sites – Data obtained from the California Air Resources Board come primarily from sites operated by the state and local agencies for SLAMS and NAMS requirements. Sites are operated following EPA guidelines and requirements, with specific requirements for accuracy (Table 3 below). However, the data in the CCAQS database has been acquired from the AIRS database (the fully quality controlled dataset), which only requires that wind speed data be reported to the nearest 1 mph (0.447 m/s) and temperature be reported to the nearest 1°C. These reporting resolutions are significantly lower than that for most of the other sources of data.

BAAQMD (BA), 9 sites – the Bay Area Air quality Management District data is essentially the same in quality as the ARB data, except that the reporting resolutions are better, having come directly from the reporting agency rather than through AIRS.

CIMIS (CI), 82 sites – Data from the California Irrigation Management Information System are collected at agriculturally relevant sites throughout California. The wind measurements differ somewhat from conventional air quality measurement systems in that they are made at 2 meters instead of 10 meters.

NOAA (NO), 16 sites – Sites operated by the National Ocean and Atmospheric Administration Environmental Technology Laboratory (ETL) are for the most part established at radar wind profiler and RASS sites operated specifically for CRPAQS, though some surface only measurements were also obtained. Temperature and relative humidity were typically measured

at both 2 and 10 meters. The NOAA sites were audited as part of the CRPAQS QA effort and thus the data is of a known quality.

NWS (NW), 10 sites – The National Weather Service submissions consisted of primarily data collect at airports. The reported data is fundamentally different from that of the other networks in several ways. First, wind speeds are only reported to the nearest MPH, and after conversion to the CRPAQS database many values are reported as 0 m/s. Second, wind direction is reported only if the reported wind speed is greater than 0. Finally, wind direction is only reported to the nearest 10°. Maintenance of the system is conducted following the guidelines in the “Federal Meteorological Handbook No. 1.”

PG&E (PG), 20 sites – PG&E wind data were monitored at several different heights, ranging from 10 to 18 meters. Reporting precision is similar to that of NOAA and CIMIS sites. QA for the PG&E sites requires further investigation.

RAWS (RA), 97 sites – Remote Automated Weather Stations (RAWS) are operated for land management applications in the western United States. RAWS measure hourly: wind speed, gusts and direction; precipitation; air temperature; relative humidity; and forest fire fuel moisture. The wind measurements differ somewhat from conventional air quality measurement systems in that they are made at 6.1 meters (20 feet) instead of 10 meters. Since RAWS stations are typically used for fire and smoke controlling applications, the vast majority of the RAWS stations are located in rural, woody areas of more complex terrain as apposed to the flat agricultural areas of the Central Valley. Maintenance of the system is conducted following the guidelines in the “NFDRS Weather Station Standards.”

Table 3 summarizes the stated monitoring specifications for each of the data sources. It should be noted that in the case of those networks with known QA programs, the sensor accuracies stated reflect the performance audit criteria. Also, stated accuracies do not take into account limitations in the reporting resolution.

Table 3. Network Monitoring Specifications

	AR	BA	CI	NO	NW	PG	RA
Wind speed							
Sensor height	10 m	10 m	2 m	10 m	10 m	10 – 20m	6.1 m
Accuracy	± .25 m/s or 5% ¹	± .25 m/s or 5% ¹	± .1 m/s or 1.5% ²	± .25 m/s or 5% ¹	± 1 m/s or 5% ²	± .2 m/s ²	± .1 m/s ²
Wind direction							
Sensor height	10 m	10 m	2 m	10 m	10 m (above structure)	10 – 20m	6.1 m
Accuracy	± 5°	± 5°	± 5° (±5%)	± 3°	± 5° when wind speed >= 2.5 m/s	± 3°	± 2°

Table 3. Network Monitoring Specifications (continued)

	AR	BA	CI	NO	NW	PG	RA
Temperature							
Sensor height	8- 10 m		1.5 m	2 or 10 m	4 m	2 – 20m	1.2-2.4 m
Accuracy	± .5°C	± .5°C	±0.1 °C over -24 to 48 °C range	±0.2°C at 20°C, ±0.4 at -20°C and 60°C	± .9°	± .1°C	± .1°
Relative humidity							
Sensor height	8-10 m	3.5-8.5 m	1.5 m	2 or 10 m	~4 m	2 – 20m	1.2-2.4 m
Accuracy	±3% 0-10% ±2% 10-90% RH; ±3% 90-100% RH	±2%	±2% RH (0-90% RH), ±5% RH (90-100%),	At 20°C: ±2%RH (0 to 90%RH) ±3%RH (90 to 100%RH)	±2% 10-100% RH; ±3% over 0-10% RH	±2%	±2% 0-80% RH; ±5% over 80-100% RH
Sampling frequency	1 s		Once every minute, the datalogger takes a reading of each sensor and records it.		1 s		1 s

¹Based on external performance audit criteria

²Stated instrument specifications

With so many different sources of meteorological data, it is important to investigate the comparability of the various sources and their representativeness relative to CRPAQS goals. Ideally, it would be nice to compare collocated measurements for each of the data sources. This is currently only possible for the CIMIS network, which has several sites in the Central Valley located near sites from other networks. This, however, turns out to be a particularly useful comparison because of work performed by STI for another CRPAQS analysis task. For this task, STI has invested considerable effort into defining the representativeness of meteorological measurements. A principal product of their investigation was the development of a web-based tool for identifying the most representative source of meteorological data available for a given location. In developing this product, STI limited the data set to the 2-meter CIMIS data and the 10-meter NOAA data, which were the data sets initially available in the CCAQS database. The RAWS sites are for the most part located in the higher elevations affected by complex terrain, and therefore of limited use for representing regional conditions. The ARB data is potentially of poorer quality due to the limitations in reporting resolution inherent with AIRS. The Bay Area AQMD data appear as if they would be useful for this effort.

One concern with STI's approach is the comparability of 2- and 10-meter data. An opportunity to investigate this is provided by a number of CIMIS sites that are virtually collocated with 10-meter ARB sites. The Davis, Arvin, and Parlier CIMIS sites all have state or local air-monitoring stations located within 1 km and are surrounded by essentially flat, uniform terrain. Thus, one would expect wind measurements from the CIMIS and ARB sites to agree closely. **Table 4** shows that this is indeed the case. As expected, results when winds are less than 1 m/s show a poorer correlation, especially for wind speed. However, when the winds are greater than 1 m/s, both wind speed and wind direction correlate strongly between the two networks. In addition, to verify that comparisons with the ARB data are not being biased in any way by the poorer reporting resolution for wind speed, comparisons were made using data from two NOAA 10-meter towers located near CIMIS stations in the Lost Hills and Madera (Chowchilla) area. These pairs aren't nearly as closely situated as the CIMIS/ARB pairs, and the effect of this increased separation is apparent in the lower correlations. Nevertheless, results are consistent with those for the CIMIS/ARB pairs, especially at Chowchilla. Note that for this and other comparisons in this task, December 2000 and January 2001 are used.

Table 4. Comparison of CIMIS (2-m) vs. NOAA (10-m) "Collocated" Wind Measurements

		vs. ARB (1mph resolution)			vs. NOAA	
		Arvin	Davis	Parlier	Lost Hills	Chowchilla
Distance between sites (km)		0.6	0.3	0.5	13.6	11.1
WS < 1 m/s	Wind Speed					
	Correlation	0.5514	0.5343	0.4808	0.0380	0.3019
	Slope	0.287	0.247	0.215	0.083	0.141
	Intercept (m/s)	0.39	0.37	0.35	0.88	0.43
	Wind Direction					
	Correlation	0.9224	0.9313	0.9257	0.8385	0.8716
	Slope	1.045	0.991	1.114	1.074	1.047
	Intercept (deg)	-39.1	-7.3	-53.1	-12.6	-16.4
WS >= 1 m/s	Wind Speed					
	Correlation	0.7891	0.9724	0.9418	0.6472	0.9401
	Slope	0.619	0.799	0.718	0.635	0.730
	Intercept (m/s)	0.35	0.18	0.10	0.20	0.24
	Wind Direction					
	Correlation	0.9910	0.9932	0.9983	0.9346	0.9770
	Slope	1.055	0.995	1.013	1.024	1.009
	Intercept (deg)	-32.0	-0.1	-28.6	0.4	-11.8

In looking at Table 4, two issues are immediately apparent. First, all five pairings show significantly lower wind speed measured by the CIMIS site relative to the ARB site – 20% to 30% lower in all cases. Second, the intercept is quite large for Arvin and Parlier, implying a bias or offset for one of the sensors.

The lower CIMIS wind speeds may be due to the increased surface friction at the 2-meter height, resulting in systematically lower wind speeds at 2-meters relative to 10-meters. Based on previous research, a power law can be used to adjust wind speeds obtained at different levels:

$$\frac{\bar{V}_r}{\bar{V}_a} = \left(\frac{Z_r}{Z_a}\right)^\alpha \quad \text{or} \quad \frac{\bar{P}_r}{\bar{P}_a} = \left(\frac{Z_r}{Z_a}\right)^{3\alpha}$$

where $\bar{V}_{a,r}$ are the mean wind speeds at heights $Z_{a,r}$ and α is the power law exponent.

An examination of long-term mean wind speeds at airport locations at which the anemometer height was changed and at tower sites with multiple levels of anemometry indicated an $\alpha \sim 1/7$ to be widely applicable to low surface roughness and well exposed sites from which conventional NCDC data are available ([Elliott 1979a](#)). Using heights of 2 and 10 meters and an α of 1/7, one calculates that the winds at 2 meters would be 20% lower than those at ten meters – very close to the observed differences between the CIMIS and ARB sites.

Another possible explanation for the wind speed difference is that there is some sort of systematic error in the sensor setup. We have no information about the CIMIS quality assurance program. The ARB sites are subjected to routine audits of the meteorological sensors, during which the sensor performance NOAA sites during CRPAQS. Performance audits conducted at Arvin, Parlier, Chowchilla and Lost Hills during CRPAQS all showed accuracies within $\pm 2\%$. Audit results for Davis were not immediately available.

While the slopes for the wind direction comparisons in Table 4 are in all cases very close to the ideal value of 1, the intercept is quite large for Arvin and Parlier, implying a bias or offset for one of the sensors. A similar issue is apparent in the comparison with the higher resolution NOAA data, with a noticeable offset noted with the Chowchilla pair. Performance audits conducted at Arvin, Parlier, Chowchilla and Lost Hills during CRPAQS all showed accuracies within $\pm 3^\circ$. Audit results for Davis again were not immediately available. The CIMIS sites are intended for uses other than air quality, and while maintenance is conducted routinely at each site, the extent of their QA program is not known. One potential explanation may be in the initial alignment of the sensors. The intercepts, or offsets, shown above are close in magnitude to multiples of the magnetic declination for this location ($\sim 15^\circ$). Thus, the accuracy of CIMIS wind direction measurements is drawn into question, when 3 of the 5 pairs reviewed show potential biases.

While convenient pairs such as those for the CIMIS/ARB comparisons about are not available for comparisons of the other data sources, the Fresno area, with its large number of relatively closely sited meteorological monitors, offers another possibility for comparing network performance, as well as an opportunity to investigate spatial representativeness, particularly within an urban setting. **Figure 1** shows the meteorological monitoring locations within the immediate Fresno area, and **Table 5** shows the distances between the stations and the network associated with each station. is verified. Audits were also conducted at the

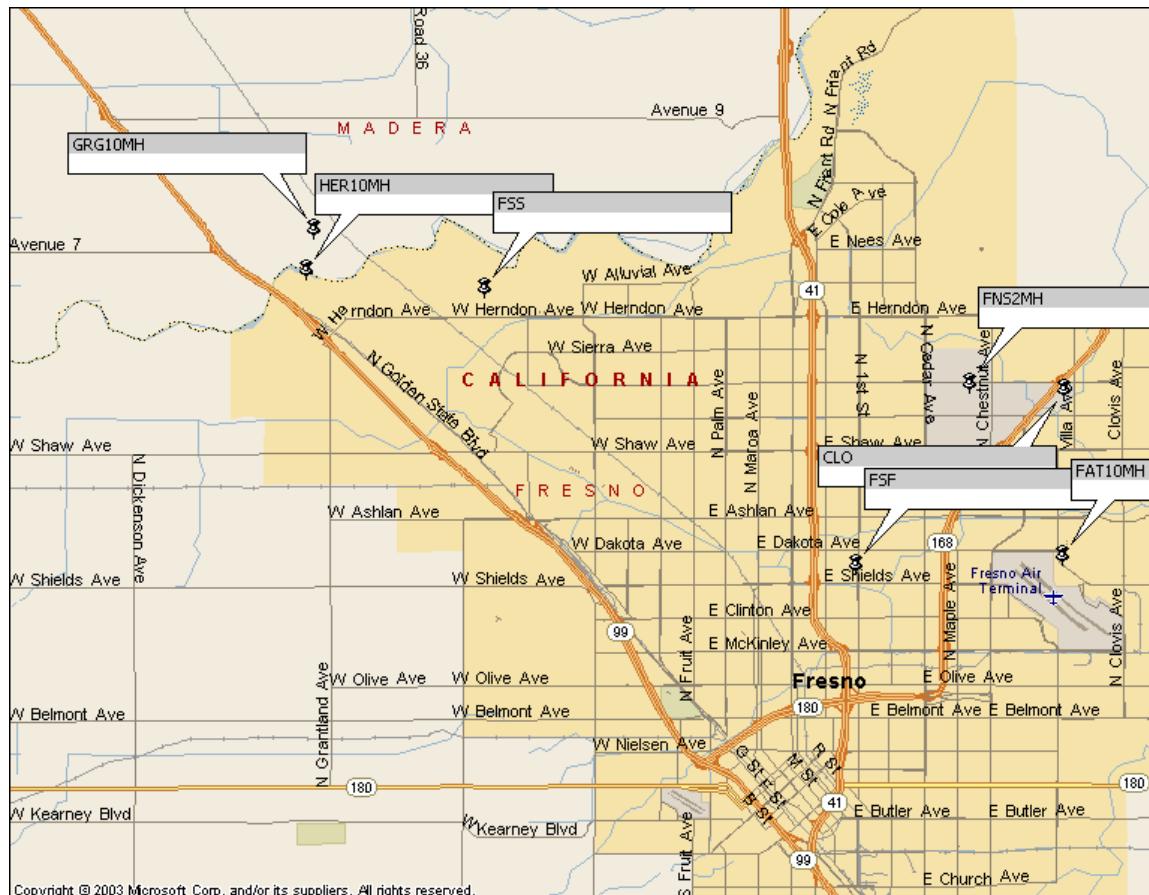


Figure 1. Fresno Area Meteorological Monitoring Locations

Table 5. Meteorological Monitoring Networks and Site Distances in the Fresno Area

	CLO (ARB)	FNS2MH (CIMIS)	FSF (ARB)	FSS (ARB)	GRG10MH (PG&E)	HER10MH (PG&E)	FAT10MH (NOAA)
CLO	0.0						
FNS2MH	2.2	0.0					
FSF	6.6	5.0	0.0				
FSS	14.2	11.8	11.2	0.0			
GRG10MH	18.4	16.2	15.2	4.4	0.0		
HER10MH	18.4	16.2	14.8	4.2	1.0	0.0	
FAT10MH	4.0	4.6	5.0	15.2	19.6	19.4	0.0

Distances in km

Comparisons were made for wind speed and wind direction for each of the pairs shown in Table 5. Comparisons were first made for wind speeds were greater than 1 m/s, when similarities and differences between pairs would be most notable. These results are presented in **Tables 6 and 7**, for wind speed and wind direction, respectively. In reviewing the slopes and intercepts in Tables 6 and 7, note that the dependent variable (y) is located across the top of the table. In addition, note that the correlation coefficient is expressed in terms of "r".

The results show that, in general, the wind data collected throughout the area are fairly well correlated with each other, even though siting issues likely exist in this predominantly urban area. Two issues are noted, however. First, consistent with the "collocated" results above, the CIMIS site has a noticeable wind direction offset, as indicated by the high wind direction intercept. This offset is consistent for comparisons with all sites, and appears to be unique for the CIMIS site. The decrease in measured wind speed at CIMIS sites noted in the "collocated" results is not as apparent in Table 6, though the poorer correlation and unknown siting issues may be affected results. Second, when comparing the other Fresno area sites with the FSS site, a fairly consistent 10% bias is noted in the wind direction slope. The reason for this bias is unknown.

To again investigate the comparability of wind measurements at low wind speeds, the analysis of the Fresno area sites was repeated for conditions when the wind speed was less than 1 m/s. Results of these comparisons are presented in **Tables 8 and 9**. For wind speeds, the correlations become poor due to the limited range being compared (ranging from -0.182 to 0.544) and increased relative error caused by poor resolution of some data, making comparison of regression results not meaningful. Therefore, for wind speed (Table 8), the average relative difference and standard deviation of the differences are presented rather than correlations. Again, with y located across the top of the table, differences were calculated as $y - x$. Thus, for wind speeds less than 1 m/s, the CLO wind speeds are typically lower than the other sites, whereas the wind speeds from GRG10MH are biased significantly higher relative to the other sites.

Other than the higher GRG10MH values, there are not any other significant patterns noted. For example, the best agreement is between FSF and FNS2MH, even with the former being mounted on a 10-meter tower on top of a building, and the latter being located 2 meters above the surface of a field. A comparison of wind directions for winds less than 1 m/s reveals essentially the same information as the higher wind speed comparison. While correlations are understandably lower, they are still relatively high. The offset for FNS2MH and the difference in slope for FSS are still apparent. The only possible additional observation is that the intercept for FSS comparisons deviates more notably from zero, though this could be consistent with the noted difference in slope.

The correlation coefficient results in Tables 6 and 7 can begin to provide information regarding spatial representativeness. When the correlation for each of the site pairs is plotted as a function of distance between the sites, a noticeable trend is identified, as shown in Figure 2. Included in the plot is the "best fit" line for the function. The correlation of this "best fit" function is presented in **Table 10**. The correlation was recalculated by removing each station individually to see if any given site had a particularly significant influence on the function's correlation. As shown in Table 10, removing FSS increased the correlation of the trend, especially for wind direction. This is consistent with the above observation that the wind direction measurements at this site appeared fundamentally different from those at the other sites. Similarly, the correlation appears to change significantly when GRG10MH is removed,

though the reason for the improvement is not obvious. Removing both sites results in a significantly improved correlation, which is shown in Figure 3.

In addition to the monitoring mentioned above, meteorological measurements were also made at the Fresno airport (FAT), and are representative of the NWS network. The FAT is essentially collocated with the NOAA FAT10MH measurements discussed above. As described above, the NWS airport data has several inherent procedural differences that make it not directly comparable to data from the other networks. However, the collocated measurements at FAT provide an excellent opportunity to see exactly how well they do compare. Results of the comparison are presented in **Table11**. Review of the results shows that wind direction measurements in general agree well, even factoring in limited reporting resolution of the NWS data (to the nearest 10°. Wind speed, however, exhibits poor correlations, with "best fit" slopes deviating significantly from 1 and high intercepts--even factoring out low wind speeds. The data show that wind speed for the NWS sites may not be suitable for use in CRPAQS analysis.

Table 6. Wind Speed Comparability – Fresno Area Monitoring Locations

	CLO	FNS2MH	FSF	FSS	GRG10MH	HER10MH	FAT10MH
WS Correlation	CLO	1					
	FNS2MH	0.914	1				
	FSF	0.907	0.915	1			
	FSS	0.794	0.827	0.829	1		
	GRG10MH	0.786	0.781	0.839	0.791	1	
	HER10MH	0.759	0.789	0.824	0.788	0.873	1
	FAT10MH	0.909	0.892	0.876	0.776	0.809	0.762
WS Slope	CLO	1					
	FNS2MH	0.874	1				
	FSF	0.935	0.985	1			
	FSS	0.943	1.023	0.954	1		
	GRG10MH	0.716	0.737	0.740	0.607	1	
	HER10MH	0.568	0.613	0.596	0.496	0.716	1
	FAT10MH	0.831	0.853	0.774	0.596	0.810	0.930
WS Intercept (m/s)	CLO	1					
	FNS2MH	0.09	1				
	FSF	-0.12	-0.10	1			
	FSS	0.28	0.29	0.48	1		
	GRG10MH	0.01	0.09	0.19	-0.01	1	
	HER10MH	0.36	0.40	0.54	0.26	0.61	1
	FAT10MH	0.05	0.11	0.36	0.18	0.57	0.23

Table 7. Wind Direction Comparability – Fresno Area Monitoring Locations

	CLO	FNS2MH	FSF	FSS	GRG10MH	HER10MH	FAT10MH
WD Correlation	CLO	1					
	FNS2MH	0.927	1				
	FSF	0.943	0.891	1			
	FSS	0.906	0.884	0.929	1		
	GRG10MH	0.893	0.881	0.933	0.932	1	
	HER10MH	0.865	0.862	0.894	0.895	0.921	1
	FAT10MH	0.946	0.899	0.934	0.886	0.892	0.859
WD Slope	CLO	1					
	FNS2MH	1.086	1				
	FSF	1.019	1.222	1			
	FSS	1.089	1.049	1.079	1		
	GRG10MH	0.978	1.010	0.999	0.897	1	
	HER10MH	0.996	0.997	0.981	0.924	1.004	1
	FAT10MH	0.977	0.963	0.969	0.909	1.015	1.015
WD Intercept (degrees)	CLO	1					
	FNS2MH	26.4	1				
	FSF	3.9	-62.6	1			
	FSS	-4.9	-34.6	-6.7	1		
	GRG10MH	18.7	-23.4	7.5	21.3	1	
	HER10MH	11.2	-21.5	9.2	12.1	-3.0	1
	FAT10MH	15.4	-20.4	8.2	19.4	-4.7	-3.0

Table 8. Wind Speed Comparability – Fresno Area Monitoring Locations, when WS < 1 m/s

	CLO	FNS2MH	FSF	FSS	GRG10MH	HER10MH	FAT10MH
WS Difference Average (m/s)	CLO	1					
	FNS2MH	-0.137	1				
	FSF	-0.163	-0.033	1			
	FSS	0.008	0.133	0.174	1		
	GRG10MH	-0.518	-0.368	-0.358	-0.532	1	
	HER10MH	-0.255	-0.111	-0.083	-0.257	0.275	1
	FAT10MH	-0.177	-0.059	-0.012	-0.187	0.344	0.070
							1
WS Difference Std Dev (m/s)	CLO	1					
	FNS2MH	0.346	1				
	FSF	0.304	0.256	1			
	FSS	0.376	0.317	0.279	1		
	GRG10MH	0.493	0.547	0.446	0.516	1	
	HER10MH	0.574	0.573	0.536	0.557	0.521	1
	FAT10MH	0.342	0.398	0.365	0.447	0.504	0.589
							1

Table 9. Wind Direction Comparability – Fresno Area Monitoring Locations, when WS < 1 m/s

	CLO	FNS2MH	FSF	FSS	GRG10MH	HER10MH	FAT10MH
WD Correlation	CLO	1					
	FNS2MH	0.869	1				
	FSF	0.917	0.846	1			
	FSS	0.874	0.804	0.906	1		
	GRG10MH	0.851	0.800	0.911	0.899	1	
	HER10MH	0.810	0.780	0.867	0.854	0.877	1
	FAT10MH	0.905	0.791	0.898	0.841	0.847	0.796
							1
WD Slope	CLO	1					
	FNS2MH	1.071	1				
	FSF	1.055	1.256	1			
	FSS	1.115	1.070	1.116	1		
	GRG10MH	1.038	1.069	1.070	0.886	1	
	HER10MH	1.018	1.039	1.091	0.933	1.011	1
	FAT10MH	0.960	0.935	0.992	0.934	1.048	1.023
							1
WD Intercept (degrees)	CLO	1					
	FNS2MH	17.6	1				
	FSF	1.6	-66.2	1			
	FSS	-10.3	-33.8	-12.3	1		
	GRG10MH	7.8	-17.1	-3.5	21.8	1	
	HER10MH	-1.8	-18.8	-8.8	11.4	-4.4	1
	FAT10MH	19.8	-4.3	3.0	22.7	-7.1	1.0
							1

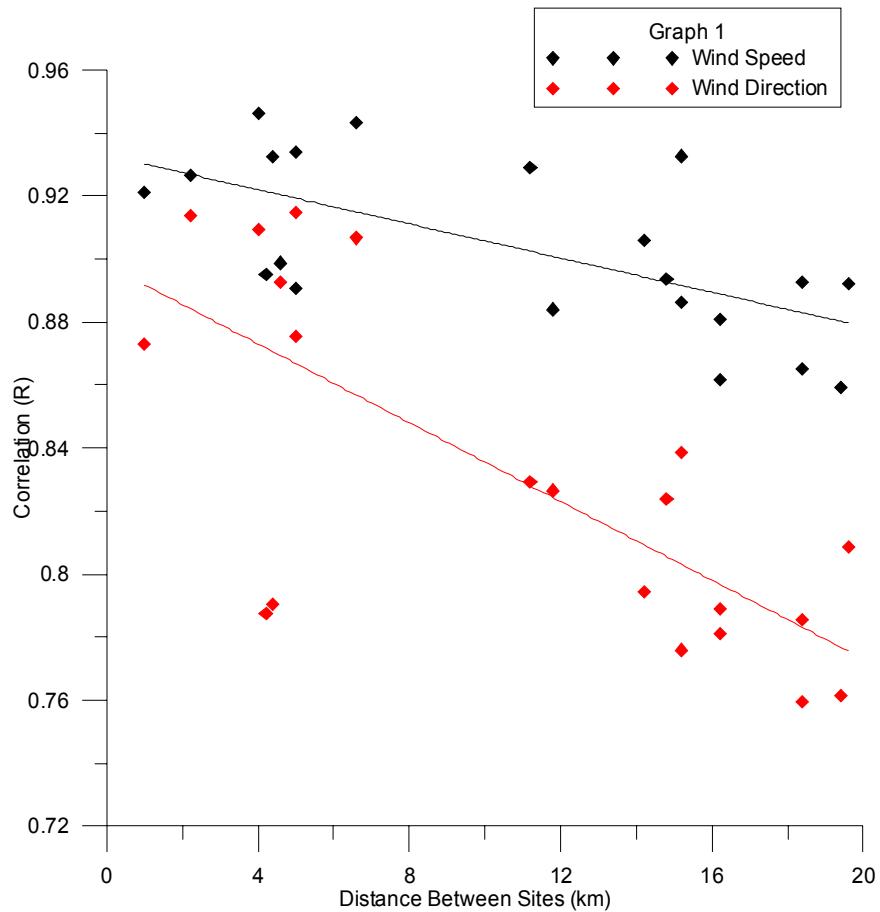


Figure 2. Site Pair Correlation Coefficients (r) as a Function of Distance

Table 10. “Best-fit” Correlation of Individual Site Pair Correlation Coefficients as a Function of Distance

	WS	WD
All sites	-0.646	-0.741
w/o FSF	-0.779	-0.746
w/o FSS	-0.687	-0.917
w/o FAT10MH	-0.554	-0.652
w/o CLO	-0.544	-0.617
w/o FNS2MH	-0.709	-0.639
w/o GRG10MH	-0.715	-0.840
w/o HER10MH	-0.557	-0.776
w/o FSS and GRG10MH	-0.824	-0.973

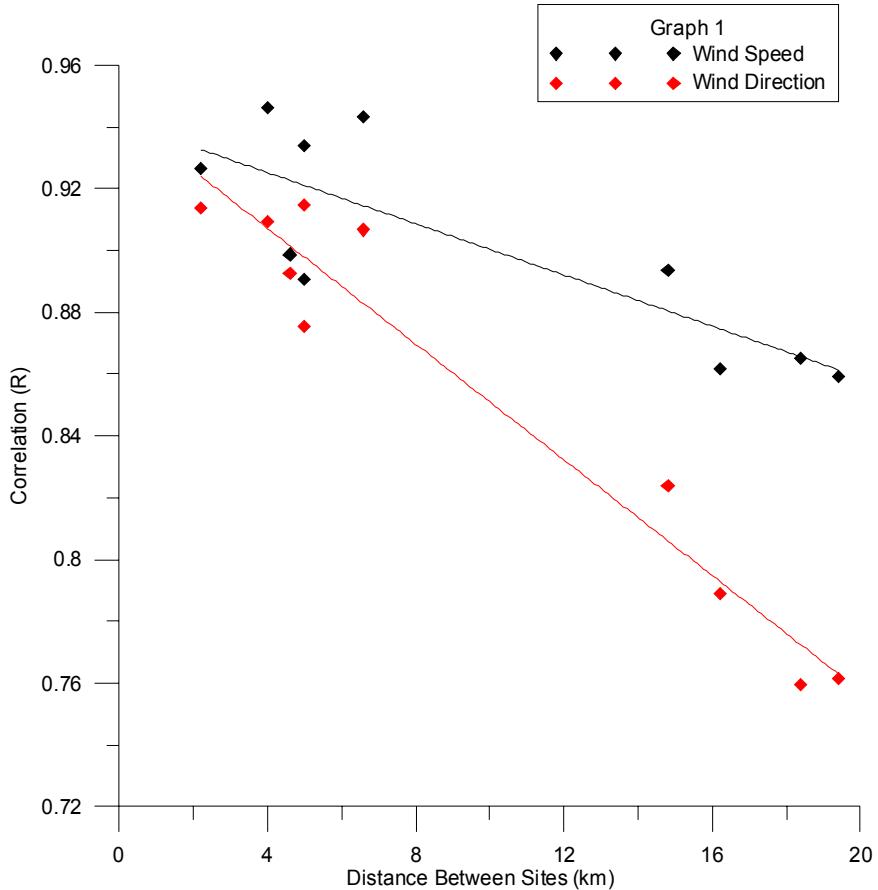


Figure 3. Correlation as a Function of Distance, w/o FSS and GRG10MH

Table 11. FAT comparison – NWS vs. NOAA

	WS	WD
All		
Correlation	0.783	0.958
Slope	0.447	0.995
Intercept	0.70	-4.8
> 1 m/s		
Correlation	0.742	0.974
Slope	0.388	0.993
Intercept	1.00	-5.6

Spatial representativeness of surface measurements in the southern Sacramento Valley was evaluated using wind data from several CIMIS sites. Figure 4 shows the locations of the sites. The first part of the evaluation consisted of comparing the Davis CIMIS site with other CIMIS sites located at progressively farther distances. As can be seen in Table 12, while the correlation between measurements understandably decreases with increasing distance, the measurements remain fairly well correlated when wind speeds are greater than 1 m/s. Wind speed correlations are low for wind speeds less than 1 m/s, but, given the small range of values, this is expected, since any scatter at all will be overemphasized. The generally good agreement between sites is particularly true for the Dixon site, located about 14 km from the Davis site. This is consistent with STI's representativeness web site, which shows the regions of good representativeness for the two sites bordering each other. It is interesting to note that the Davis/Nicolaus pair is nearly as well correlated as the Davis/Hastings Tract pair, even though the Nicolaus site is almost twice as far as the Hasting Tract site from Davis. Wind direction actually is slightly better correlated at Nicolaus.

The second part of the evaluation compares measurements at two CIMIS sites near Lodi located only 4 km apart. This is as close as one can get to having collocated CIMIS measurements, considering the terrain setting. Results of the comparison, shown in Table 10, were puzzling. First, the comparison results are not significantly better than the Davis/Dixon comparison for wind direction, and are noticeably worse for wind speed, despite the fact that the Lodi sites are located considerably closer together than the Davis/Dixon sites. Second, while the slope of the "best fit" line for wind directions was near unity (0.97), the slope and intercept of the wind speed "best fit" (0.507 and 0.44 m/s) indicated significant differences. Finally, though the wind direction measurements were highly correlated, a significant offset was once again noticed (11° in this case), supporting concerns mentioned previously with the alignment of the CIMIS systems.

In conclusion, the CCAQS database has at least seven sources of meteorological data. Based on the above evaluations, the following observations regarding data quality and representativeness can be made:

ARB – The ARB data are well suited for analyses due to having a well-established QA program, and at least 114 sites exist within the database. The only limitation with the data is that currently the wind speed is only reported to the nearest 0.447 m/s. This limitation, however, does not appear to significantly affect the representativeness of the data.

BAAQMD – the BAAQMD data is essentially the same in quality as the ARB data, except that the reporting resolution is better. Although no comparisons of the BAAQMD data were made, this dataset are also recommended for use.

CIMIS – This data set should be used with extreme caution. Two significant issues regarding the CIMIS data were noted. First, the fact that wind measurements are made at 2 meters instead of 10 meters appears to result in the reported wind speeds decreasing by about 30% relative to those made at 10 meters. This can be corrected, for the most part, by using the standard power law adjustment. Second, the results brought about significant questions about the alignment of the wind direction system, with possible misalignments as much as 30° noted. This potential problem was noted at a significant number of sites investigated. The QA program for the CIMIS network is not known.

NOAA – No problems were noted with the NOAA data and the data can be used by other researchers with no qualifications.

NWS – The NWS data is limited in that wind speeds are only reported to the nearest 0.447 m/s and wind direction only to the nearest 10°. In addition, wind speed comparisons with a “collocated” NOAA sensor showed significant differences. Based on this, use of the NWS data is not recommended.

PG&E (PG) – PG&E wind data were monitored at several different heights, ranging from 10 to 18 meters. Reporting precision is similar to that of NOAA and CIMIS sites. QA for the PG&E sites requires further investigation. Comparisons with other nearby systems were inconclusive.

RAWS (RA) – The RAWS data was not compared, since the complex terrain where most of these sensors are located is representative of local conditions and as such these sites would not be expected to correlate well.

For STI's initial work in evaluating the representativeness of meteorological measurements for given study areas, they have concentrated on using the CIMIS and NOAA data. Given the issues noted with the CIMIS data, this may need to be reevaluated. Use of the ARB data may be preferred.

Some effort was made to evaluate spatial distribution of the meteorological monitoring sites. Based on the comparisons performed, it appears that the spatial distribution in both rural and urban settings is adequate. Neighboring sites appear to correlate well with each other, with the correlation dropping off in a somewhat predictable manner as distance between sites increases.

An evaluation of CRPAQS upper air measurements during light wind scenarios is discussed in Work Element 3.3.1.

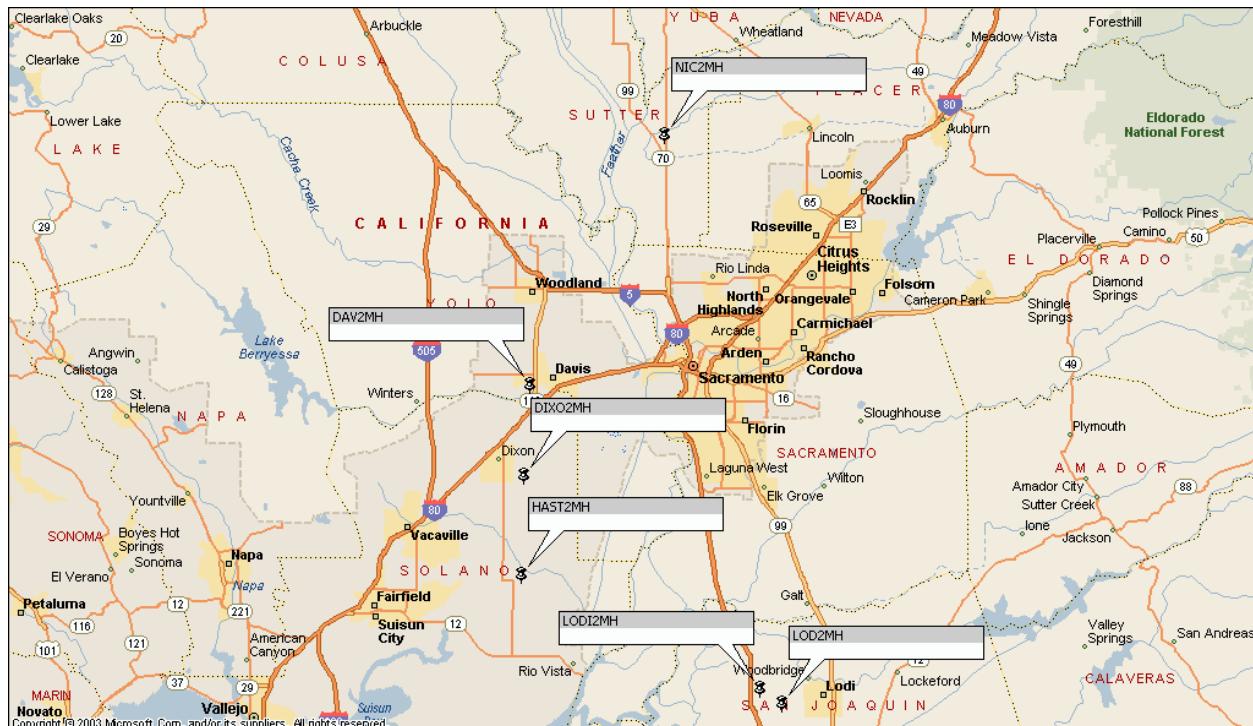


Figure 4. Southern Sacramento Valley CMIS Sites

Table 12. Comparison of CMIS sites in the Southern Sacramento Valley

		vs. DAV2MH			vs. LODI2MH	
		13.8 km DIXO2MH	28.0 km HAST2MH	42.4 km NIC2MH		4.0 km LOD2MH
WS<1	WD Correlation	0.853	0.758	0.775		0.899
	WS Correlation	0.229	0.064	0.164		0.493
WS>1	WD Correlation	0.978	0.901	0.917		0.986
	WS Correlation	0.931	0.845	0.759		0.796
All	WD Correlation	0.935	0.852	0.869		0.936
	WS Correlation	0.938	0.850	0.796		0.791

Table 1. CRPAQS Meteorological Measurements Inventory: Dec 1999 – Feb 2000

<i>support_code</i>	<i>data_src</i>	<i>utme_z10</i>	<i>umrn_z10</i>	<i>support_name</i>	<i>scalar_ws</i>	<i>vector_ws</i>	<i>resultant_wd</i>	<i>average_wd</i>	<i>valid_tp</i>	<i>valid_rm</i>	<i>valid_dp</i>	<i>valid_tot_sorrad</i>	<i>valid_press</i>	<i>valid_sigmatheta</i>	<i>valid_precip</i>	<i>valid_hozz_visibility</i>
AGA2MH	CI	589.338	4094.918	De Laveaga 2 Meter Height.	90	90	90	90	90	90	90	90	90	90	99	
ALDR	RA	523.594	4388.739	ALDER SPRINGS	76	98		99	98						66	99
ALTR10MH	NO	635.655	4180.098	Altamont Pass Stn10 Meter Height	66											
ALTR2MH	NO	635.655	4180.098	Altamont Pass 2 Meter Height				66	66		66	66			66	66
AND	AR	527.1	4292.546	Anderson Springs Stn	100	100	100	100	100	100	100	100				
ARA2MH	CI	799.933	3815.361	Santa Barbara 2 Meter Height	100	100	100	100	100	100	100	100				
ARB	AR	578.701	4318.349	Arbuckle Stn (Hillgate Rd 2W)		99	99		99							
ARBU	RA	515.98	4471.772	ARBUCKLE	99		100		100		100					100
ARR	AR	720.739	3880.391	Arroyo Grande/Ralcoa Stn		100	100		100		100					
ARSR	RA	635.552	4010.313	ARROYO SECO (MT. DIABLO)	85		100		100		100					100
ARV	AR	883.865	3904.096	Arvin Stn		100	100		99	100		100		32		
ARVE2MH	CI	884.423	3903.864	Arvin-Edison 2 Meter Height	91	91	91		91	85	85	88		91		
ASHC	RA	585.701	4569.944	ASH CREEK	81		90		89	89					90	
ASHV	RA	694.462	4546.886	ASH VALLEY	97		100		100	100		100			100	
ATC2MH	CI	710.624	4590.236	Alturas 2 Meter Height	100	100	100		100	100	100	100				
ATL	AR	711.542	3929.874	Atascadero Stn (Lewis Ave.)		100	100		100	0						
BAC	AR	857.839	3919.52	Bakersfield Stn (5558 California Ave)	89	89			89	89		89	89			
BALR	RA	699.685	4308.614	BALD MOUNTAIN LOCATION	94		99		99	98		98			99	
BEAC	RA	733.317	4263.179	BEAVER PEAK LOC	97		98		98	98					98	
BEAR	RA	946.815	3982.23	BEAR PEAK	100		100		100	100		100			100	
BEL10MH	PG	674.343	4209.135	Bellota Stn 10 Meter Height	100		100		100						100	
BENT	RA	897.994	4197.849	BENTON	99		100		100	100		100			100	
BGS	AR	862.331	3922.943	Bakersfield Stn (1128 Golden State)		100	100		100	98		100	100			
BHIL	RA	446.817	4549.839	BIG HILL	57		59		58	57					65	
BIC2MH	CI	907.135	4144.304	Bishop 2 Meter Height	98	98	100		100	100	100	100			100	
BKC2MH	CI	775.423	3949.194	Blackwells Corner 2 Meter Height	100	100	100		100	100	100	100				
BLUD	RA	723.752	4548.033	BLUE DOOR	99		100		100	100	100	100			100	
BMF	NW	858.71	3926.229	Bakersfield/Meadows Field Stn	100		100		100	100	100	100				100
BOG2	RA	663.228	4503.551	BOGARD RANGER STATION	81		98		98	98	98	98			98	
BRG2MH	CI	800.263	3933.923	Belfridge 2 Meter Height	100	100	100		100	100	100	100				
BRMR	RA	765.583	3897.69	BRANCH MOUNTAIN					100	100					100	
BRVA2MH	CI	638.414	4244.132	Browns Valley 2 Meter Height	100	100	100		100	100	100	100			100	
BRY2MH	CI	627.114	4273.126	Bryte 2 Meter Height	99	99	99		99	99	99	99			99	
BSE10MH	NO	869.39	3918.379	Bakersfield (Southeast) 10 Meter Height	89	89	89		89	89					89	
BSE2MH	NO	869.39	3918.379	Bakersfield (Southeast) 2 Meter Height					89	89		89	89		89	
BSW	AR	1046.471	3877.421	Barstow Stn	33		33		33	33						
BTW2MH	CI	617.855	4198.58	Brentwood 2 Meter Height	100	100	100		100	100	100	100			100	
BULL	RA	744.643	4484.914	BULL FLAT	96		100		100	100	100	100			100	
BUTM	RA	627.565	4437.377	BUTTE MEADOWS	94		97		97	97	97	97			97	
BWC2MH	CI	1050.171	3876.561	Barstow 2 Meter Height	100	100	100		100	100	100	100			100	
CA1	AR	771.288	3820.222	Capitan Stn/Las Flores Canyon #1	100	100	100	100	100	100						
CAL2	RA	516.74	4573.566	CALLAHAN	82		99		99	99			12		99	
CAMA2MH	CI	869.056	3794.95	Camarillo 2 Meter Height	44	44	44		44	44	44	44		44		100
CANB	RA	678.149	4588.941	CANBY	95		100		100	100	100				100	
CCR	NW	583.433	4203.816	Concord/Buchanan Stn	83		79		83	83	83		83		83	83
CCW18MH	PG	608.764	4207.998	Contra Costa Power Plant Stn 18 Meter He	100		100		100						100	
CHES	RA	650.015	4460.607	CHESTER	94		95		95	95	95				95	
CHM	AR	598.772	4401.147	Chico Stn (Manzanita)		94	94		94	94			94			
CHUC	RA	864.824	3858.841	CHUCHUPATE	89		100		100	100	100				100	
CJN	AR	955.595	4001.063	Coso Junction Stn (Highway 395 Rest Area	100			100	34	100		99		94		100
CLO	AR	792.905	4079.674	Clovis Stn (908 N Villa Ave.)	99		99	99	99	99	99	99	100			
CLU2MH	CI	584.247	4342.102	Colusa 2 Meter Height	100	100	100		100	100	100	100			100	
CMO2MH	CI	696.998	4291.711	Camino 2 Meter Height	100	100	100		100	100	100	100			100	
CMV	AR	613.508	4037.901	Carmel Valley Stn (Ford Road)					100							
CNR2MH	CI	556.55	4230.105	Carneros 2 Meter Height	100	100	100		100	100	100	100			100	
COL2	RA	504.297	4624.861	COLLINS BALDY	91		92		92	92					92	
COOS	RA	393.699	4456.966	COOSKIE MOUNTAIN	99		100		100	100		99		100		
COP	AR	809.178	4000.549	Corcoran Stn (Patterson)		100	100		100	0		100				

Table 1. CRPAQS Meteorological Measurements Inventory: Dec 1999 – Feb 2000 (cont.)

<i>support_code</i>	<i>data_source</i>	<i>utme_z10</i>	<i>utmn_z10</i>	<i>support_name</i>	<i>scalar_ws</i>	<i>vector_ws</i>	<i>resultant_wd</i>	<i>average_wd</i>	<i>valid_tp</i>	<i>valid_rh</i>	<i>valid_dp</i>	<i>valid_tot_solidad</i>	<i>valid_press</i>	<i>valid_sigmathera</i>	<i>valid_precip</i>	<i>valid_horiz_visibility</i>	
CORN	RA	570.94	4421.096	CORNING	96	99		99	99		99		99		99		
CORR	RA	606.98	4094.668	CORRALITOS	80	100		100	100		99		99		100		
COSO	AR	972.523	4004.143	Coso Gate	100		100	100	100								
COUL	RA	550.913	4318.83	COUNTY LINE	91	94		94	94		94				94		
CRP	AR	825.804	3812.532	Carpinteria Stn (Gobernador Rd.)	100	99	99	100	100								
CSS	AR	584.879	4339.534	Colusa Stn (100 Sunrise Blvd.)	100	100		100	100				100				
CTV2MH	CI	609.42	4069.635	Castroville 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
CUY2MH	CI	810.126	3870.57	Cuyama 2 Meter Height	100	100	100	100	98	98	100	100	100				
DAV2MH	CI	606.682	4265.791	Davis 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
DELO	RA	897.325	3944.909	DELONAGHA	71	76		76	76					77			
DEVp	RA	844.791	4171.743	DEVILS POST PILE	89	99		99	99					99			
DIX02MH	CI	605.9	4252.352	Dixon 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
DOYL	RA	747.01	4434.025	DOYLE	97	100		100	100					100			
DSX	AR	952.958	4031.625	Dirty Sox/Hwy 109 Stn	100		100										
DUR2MH	CI	601.043	4384.814	Durham 2 Meter Height.	100	100	100	100	92	92	100	100	100	100			
DVL	AR	1049.44	4057.692	Death Valley IMPROVE Stn	94	94	94	99	99	99	99	99	99				
DVP	AR	571.765	4096.298	Davenport Stn	100		100	100									
DVS	AR	606.773	4265.493	Davis/UCD Campus Stn	88	98		99									
ECO2MH	CI	653.427	4024.924	Arroyo Seco_CIMIS 2 Meter Height.	100	100	100	100	100	100	100	100	100	100			
ECP	AR	773.109	3817.066	El Capitan Beach Stn	100	100	100	100	100								
EDS	AR	877.121	3919.134	Edison Stn	98	98		98									
EELR	RA	492.872	4409.049	EEL RIVER	94	100		100	100					100			
ELK	AR	637.982	4240.284	Elk Grove Stn (Bruceville Rd.)	100	100		100	100		100	100	100	100			
ELM	AR	856.011	3798.146	El Rio Mesa School #2 Stn	97	97	97	97	97	97	97	97	97				
ELMI	RA	999.776	3845.837	EL MIRAGE	89	98		98	98		98	98	98	98	98		
FAMO2MH	CI	843.101	3946.435	Famoso 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
FAT	NW	792.988	4075.66	Fresno Air Terminal Stn	100	100		100	100	100	100	100	99	99	100		
FIS	AR	788.336	4072.613	Fresno Stn (Fisher St.)	68	68											
FIV2MH	CI	759.129	4024.886	Fivepoints/WSFS USDA 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
FML	AR	736.944	4214.655	Sonora - Five Mile Learning Center Stn	100	100		100	100								
FNS2MH	CI	790.614	4079.768	Fresno State 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
FOC2MH	CI	655.185	4279.306	Fair Oaks 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
FORK	RA	810.378	4126.109	NORTH FORK	85	100		100	100						100		
FRB2MH	CI	714.873	4080.852	Firebaugh/Telles 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
FRC2MH	CI	591.192	4153.411	Fremont 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
FSF	AR	787.965	4075.308	Fresno Stn (3425 First St.)	133	68	68	68	68	68	68	68	68	68	68		
FSF	DR	787.965	4075.308	Fresno Stn (3425 First St.)	100	100		100	100								
FSS	AR	778.761	4081.671	Fresno Stn (Sierra Skypark #2)	100	100	100	100	100								
FULT10MH	PG	520.992	4236.703	Fulton Tower 10 Meter Height	100	100		100	100						100		
GCL	AR	710.283	3889.271	Grover City Stn (Lesage Drive)	97	97											
GEC2MH	CI	939.461	3794.395	Glendale 2 Meter Height	100	100	100	100	100	100	100	100	100	100			
GEN	AR	759.301	3819.879	Gaviota East Stn (odor)	100	99	99	100	100								
GHOP	RA	687.48	4516.499	GRASSHOPPER	95	100		100	100						100		
GLA10MH	NO	789.814	3814.085	Goleta 10 Meter Height	95	95	95	95	95	95	95	95	95	95	95	95	
GLH	AR	521.087	4299.796	Glenbrook Stn (High Valley Rd.)	100		100	100	100								
GNF	AR	792.499	3815.924	Goleta Stn (N Fairview Ave.)	100	100	100	100	100	100	100	100	100	100	100		
GOL2MH	CI	787.682	3818.75	Goleta Foothills 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100		
GRG10MH	PG	774.524	4082.9	Gregg Stn 10 Meter Height	100	100		100	100								
GRI	AR	614.897	4353.792	Gridley Stn (608 Cowee Rd.)	100	100		100	100								
GVB	AR	757.375	3824.022	Gaviota TC-Site B Stn	100	100	100	100	100								
GVR2MH	CI	609.797	4088.834	Green Valley Rd. 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100		
GWN	AR	773.535	3818.244	Gaviota West Stn (odor)	100	94	94	99	100								
H395	AR	859.937	4174.272	Highway 395 Stn	99		100	100	100								
HAST2MH	CI	605.83	4237.701	Hastings Tract 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100		
HAYM	RA	486.029	4488.607	HAYFORK	18	34		34	34						34		
HEL1	RA	740.497	4290.609	HELL HOLE	98	99		99	99						99		
HER10MH	PG	774.378	4081.896	Herndon Stn 10 Meter Height	100	0	100	100	100						100		
HES	AR	1025.418	3822.913	Hesperia Stn (Olive Street)	100										34		
HFS2MH	CI	492.295	4318.126	Hopland FS 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100		
HOB	AR	522.561	4300.111	Hobergs Stn (NW of Pine Summit 1 mi.)	100		100	100	100	100	100	100	100	100	100		

Table 1. CRPAQS Meteorological Measurements Inventory: Dec 1999 – Feb 2000 (cont.)

<i>support_code</i>	<i>data_source</i>	<i>utime_z10</i>	<i>utmp_z10</i>	<i>support_name</i>	<i>scalar_ws</i>	<i>vector_ws</i>	<i>resultant_wd</i>	<i>average_wd</i>	<i>valid_tp</i>	<i>valid_rh</i>	<i>valid_dp</i>	<i>valid_tot_solarad</i>	<i>valid_press</i>	<i>valid_sigmeteta</i>	<i>valid_precip</i>	<i>valid_horiz_visibility</i>
HOOP	RA	443.414	4544.125	HOOPA	99	100		100	100		100			100		
HORS	RA	711.202	4500.538	HORSE LAKE	97	100		100	100		97			100		
HOTS	RA	1141.458	3981.577	HORSE THIEF SPRINGS	99	100		100	100		100			100		
HST	AR	646.138	4078.64	Hollister Stn (1979 Fairview)	98		98	98								
HUNT	RA	994.756	4060.378	HUNTER MOUNTAIN	98	99		99	99					99		
HURL	RA	804.434	4102.176	HURLEY	96	100		100	100		100			100		
JAC	AR	695.509	4245.702	Jackson Stn (201 Clinton Road)		99	99		99							
JAWB	RA	934.21	3915.992	JAWBONE	99	100		100	100		100			100		
JOHN	RA	901.798	3989.795	JOHNSONDALE	82	100		100	100					100		
JSN	AR	1110.383	3789.643	Joshua Tree National Monument					99	99		99				
JUA2	RA	582.632	4626.292	JUANITA LAKE	37	40		40	40		39			40		
JUNI	RA	711.51	4578.505	JUNIPER CREEK	99	100		100	100		100			100		
KCG	AR	959.638	4050.096	Keeler Stn (Cerro Gordo Rd.)	100		100	100								
KCO2MH	CI	672.434	3998.868	King City (Oasis Rd.) 2 Meter Height	91	91	100		100	100	100	100		100		
KES2MH	CI	688.068	4122.622	Kesterson 2 Meter Height	100	100	100		100	100	100	100		100		
KET2MH	CI	780.449	3973.675	Kettleman 2 Meter Height	100	100	100		100	100	100	100		100		
KETT	RA	765.82	3991.069	KETTLEMAN HILLS	99	100			100	100		100			100	
KNO2	RA	550.565	4301.439	KNOXVILLE CREEK	91	94		94	94		94			94		
KRVM10MH	NO	829.185	4090.2	Kings River Powerhouse 10 Meter Height	94	94	94							94		
KRVM2MH	NO	829.185	4090.2	Kings River Powerhouse 2 Meter					94	94		94	94		94	
LAD2	RA	643.34	4517.889	LADDER BUTTE	92	94		94	94		93			8		
LAUF	RA	726.128	4446.119	LAUFMAN	97	99		99	99					99		
LBP15MH	PG	676.153	4102.384	Los Banos_PGE Stn 15 Meter Height	100	100		100						100		
LCV2MH	CI	853.677	4030.562	Lindcove 2 Meter Height	100	100	100		100	100	100	100		100		
LEA10MH	PG	575.17	4173.81	San Leandro 10 Meter Height	100	100		100						100		
LEEV	AR	840.456	4208.043	Lee Vining-Hwy 395 Stn	100		100	100						100		
LFC	AR	788.193	3814.471	Las Flores Canyon Stn (12100 Calle Real)	100	100	100	100	100	100	100	100				
LHS	AR	735.516	3845.33	Lompoc Stn(HS & P)	100	100	100	100	100							
LHSP10MH	NO	800.026	3946.902	Lost Hills 10 Meter Height	76	65	65		76	76				76		
LHSP2MH	NO	800.026	3946.902	Lost Hills 2 Meter Height					76	76		76	75		76	
LINC	RA	650.207	4304.955	LINCOLN	95	100		100	100	100		99			100	
LIVE	RA	604.573	4174.308	LIVERMORE	98	99		99	99	99		99			99	
LKGR	AR	1027.588	3803.867	Lake Gregory-Lake Dr. Crestline								98				
LMK	AR	879.948	4039.702	Mineral King Lookout Point Stn	63	63	63		63	50		63				
LMP	AR	735.203	3844.667	Lompoc Stn (HS&P #2 odor)	100	100	100	100	100							
LNP	AR	620.686	4488.026	Lassen Volcanic NP Stn - IMPROVE	99	99	99		99					92		
LOD2MH	CI	645.01	4218.995	Lodi 2 Meter Height	99	99	99		99	99	99	99			99	
LOM	AR	733.196	3835.592	Lompoc Stn (128 South H St.)	100	70	70	100	100							
LONE	AR	942.955	4062.56	Lone Pine Stn (Sewer Ponds)	100			100	100							
LOPR	RA	795.24	3826.072	LOS PRIETOS	90	100			100	100		100			100	
LPD	AR	794.701	3826.555	Los Padres NF Stn (Paradise Rd.)	99	99	99	99	99							
LYT	AR	762.695	4314.835	South Lake Tahoe Stn (3337 Sandy)	100	100		100	95		100	100				
LVK	NW	604.026	4172.98	Livermore Municipal AP NWS Stn	98	96			98	98	89		89			98
LWP	AR	946.448	3849.321	Lancaster Stn (W. Pondera St.)	65		65	65	65				65			
LYON	RA	493.975	4329.854	LYONS VALLEY	78	78		78	78		73			78		
M14	AR	676.949	4167.776	Modesto Stn (814 14th St.)	100	100		100					100			
M29	AR	766.543	4084.057	Madera Stn (29 1/2 No. of Ave 8)	34	34		100	100		100	100				
MAN2	RA	621.664	4488.842	MANZANITA LAKE	88	99		99	99		99			99		
MAN2MH	CI	656.375	4188.791	Manteca 2 Meter Height	100	100	100		100	100	100	100		100		
MAR2	RA	800.113	4156.975	MARIPOSA GROVE	85	99		99	99						100	
MBP	AR	726.58	3902.302	Morro Bay Stn		100	100									
MBW15MH	PG	694.951	3916.435	Morro Bay Power Plant Stn 15 Meter Heigh	97	97		97					97			
MCA18MH	PG	800.801	4056.787	McCall Stn 18 Meter Height	100	100		100					100			
MCS	AR	828.006	3884.772	Maricopa School/Stanislaus Stn		100	100		100							
MDC2MH	CI	750.292	4100.345	Madera 2 Meter Height	83	83	100		100	100	100	100		100		
MDT2MH	CI	660.059	4166.772	Modesto 2 Meter Height	100	100	100		100	100	100	100		100		
MERC2MH	CI	731.617	4132.661	Merced 2 Meter Height	99	99	100		100	100	100	100		100		
MHC2MH	CI	621.244	4112.337	Morgan Hill 2 Meter Height	100	100	100		100	100	100	100		100		
MID10MH	PG	822.158	3923.096	Midway Stn 10 Meter Height	100	100		100					100			
MID2	RA	1192.136	3912.959	MID HILLS	99	100		100	100		100		100		100	

Table 1. CRPAQS Meteorological Measurements Inventory: Dec 1999 – Feb 2000 (cont.)

<i>support_code</i>	<i>data_source</i>	<i>utime_>10</i>	<i>utmn_>10</i>	<i>support_name</i>	<i>Scalar ws</i>	<i>Vector ws</i>	<i>resultant wd</i>	<i>average wd</i>	<i>Valid_tp</i>	<i>Valid_rh</i>	<i>Valid_dp</i>	<i>Valid_tot_solarad</i>	<i>Valid_press</i>	<i>Valid_sigmathfa</i>	<i>Valid_precip</i>	<i>Valid_horiz_visiblity</i>		
MJV10MH	NO	942.274	3889.517	Mojave 10 Meter Height	100	77	77		100	100		100	100	100	100			
MJV2MH	NO	942.274	3889.517	Mojave 2 Meter Height					100	100				100				
MLP15MH	PG	609.276	4073.96	Moss Landing Power Plant Stn 15 Meter He	100		100		100									
MLS	AR	608.316	4073.659	Moss Landing Stn (Sand Holt)	100			100	100									
MOD	NW	680.899	4166.536	Modesto City/Sham Stn	100	100		99	99	99	99	98			99			
MOJ2	RA	1130.732	3900.263	MOJAVE RIVER SINK	98	99		99	99	99	99	99						
MOP	AR	942.642	3889.23	Mojave Stn (923 Poole St.)		98	98		98				66					
MRA	AR	727.58	4129.097	Merced Stn (385 S Coffee St.)	100			100	100									
NAT	AR	629.395	4277.33	Sacramento/Natoma Stn (3801 Airport Rd.)		100	100		100	100	100	100						
NGR	AR	722.443	3877.869	Nipomo Stn (1300 Guadalupe Rd.)	97	97		100										
NIC2MH	CI	626.226	4303.26	Nicolaus 2 Meter Height	96	96	100		100	100	100	100	100	100				
NLC	NW	773.785	4024.669	Lemoore NAS/Reeves Stn	42		42		41	42	39		42		42			
NOS2MH	CI	699.085	4107.223	Los Banos 2 Meter Height	95	95	100		100	100	100	100	100	100				
NVC2MH	CI	540.058	4219.133	Novato 2 Meter Height	96	96	100		100	99	99	100						
OAK3	RA	429.771	4631.711	OAK KNOLL	60	65		65	65			64			65			
OAKC	RA	922.815	4087.7	OAK CREEK	95	95		95	94			93			95			
OAKN	RA	568.89	4192.03	OAKLAND NORTH	64	64		64	64						64			
OAKO	RA	886.06	4011.79	OAK OPENING	85	100		100	100						100			
OAKS	RA	573.814	4182.453	OAKLAND SOUTH	99	100		100	100						100			
OCO2MH	CI	822.64	4069.784	Orange Cove 2 Meter Height	100	100	100		100	100	100	100	100	100				
OHC2MH	CI	572.307	4181.607	Oakland Foothills 2 Meter Height	100	100	100		100	100	100	100	100	100				
OJO	AR	845.088	3814.56	Ojai Stn (Ojai Rd.)	100	100	100	100	100	100	100	100						
OKV2MH	CI	551.495	4253.928	Oakville 2 Meter Height	100	100	100		100	100	100	100	100	100				
OLD	AR	861.617	3928.72	Oildale Stn (3311 Manor)		100	100		100									
OLW	AR	949.942	4025.096	Olancha Stn (Walker Creek Rd.)	100			100	100	100			100					
OPAL	RA	1030.809	3905.511	OPAL MOUNTAIN	98	99		99	99		99			99				
ORL2MH	CI	572.712	4393.707	Orland 2 Meter Height	100	100	100		100	100	100	100	100	100				
OWE2	RA	739.48	4290.578	OWENS CAMP LOC	95	99		99	99						99			
PAC110MH	NO	658.088	4104.283	Pacheco Pass 10 Meter Height	83	83	83								82			
PAC12MH	NO	658.088	4104.283	Pacheco Pass 2 Meter Height					82	82	82	82	82	82				
PAJA2MH	CI	612.079	4084.648	Pajaro 2 Meter Height	100	100	100		100	100	100	100	100	100				
PAN2	RA	1032.243	4012.16	PANAMINT	97	98		98	98		98	98	98		98			
PANO2MH	CI	702.108	4084.869	Panoche 2 Meter Height	100	100	100		100	100	100	100	100	100				
PAQ10MH	PG	594.654	4210.319	Pittsburg AQ Stn 10 Meter Height	89	89		89							89			
PATS2MH	CI	664.637	4145.106	Patterson 2 Meter Height	100	100	100		100	100	100	100	100	100				
PATT	RA	511.33	4460.298	PATTY MOCUS	24	24		25	24						25			
PETE2MH	CI	533.592	4235.303	Petaluma East 2 Meter Height	100	100	100		99	99	99	99	100	100				
PGN	AR	689.681	4288.557	Placerville Stn (Gold Nugget)		100	100		100									
PGV	AR	629.103	4291.751	Pleasant Grove Stn (4 SW)		100	100		100	100								
PIER	RA	674.658	4444.357	PIERCE	94	97		97	97						97			
PIK2	RA	656.282	4369.935	PIKE COUNTY LOOKOUT	94	99		99	99						99			
PIN	AR	665.006	4039.087	Pinnacles National Monument Stn	100	67	67		100	100	100	100	100					
PIR	AR	883.968	3814.038	Piru Stn (2 mi SW)	100	100	100	100	100	100	100	100	100					
PLR	AR	812.388	4055.978	Parlier Stn	95		95	99	99	99	99	99	99	99				
PRC2MH	CI	887.296	3811.585	Piru 2 Meter Height	100	100	100		98	98	98	98	100	100				
PRF	AR	709.182	3945.358	Paso Robles Stn (235 Santa Fe)		100	100		100									
PRL2MH	CI	812.844	4055.773	Parlier Stn (CIMIS) 2 Meter Height	100	100	100		100	100	100	100	100	100				
QUI1	RA	680.517	4437.097	QUINCY ROAD	89	99		98	98						99			
RICX10MH	NO	552.377	4199.641	Richmond Tower 10 Meter Height	21	21	21							21				
RICX2MH	NO	552.377	4199.641	Richmond Tower 2 Meter Height					21	21	21	21	21	21	21			
ROC	AR	654.86	4294.653	Rocklin Stn (5000 Rocklin Rd.)		100	100		100									
ROCK	RA	882.818	4164.671	ROCK CREEK	95	99		99	99		99	99	99	99		99		
ROS	AR	650.782	4289.79	Roseville Stn (151 N Sunrise)		100	100		100	100				100				
ROSE	RA	850.224	3828.799	ROSE VALLEY	87	100		100	100						100			
ROSP	RA	611.763	4151.098	ROSE PEAK	91	91		91	91		91	91	91	91		91		
S13	AR	631.261	4269.745	Sacramento Stn (1309 T St.)		100	100		99	99				100	100			
SAC	NW	630.773	4264.006	Sacramento Executive Airport Stn	100	100		100	100	100	100	100	98		99			
SALH	AR	620.89	4059.026	Salinas Stn (High School)	61		61	61										
SAW2	RA	489.183	4571.856	SAWYERS BAR	81	99		100	99						100			
SBC	AR	803.307	3813.504	Santa Barbara Stn (3 W Carillo)		100	100		100					100				

Table 1. CRPAQS Meteorological Measurements Inventory: Dec 1999 – Feb 2000 (cont.)

<i>support_code</i>	<i>data_source</i>	<i>utme_z10</i>	<i>utmz10</i>	<i>support_name</i>	<i>scalar_ws</i>	<i>vector_ws</i>	<i>resultant_wd</i>	<i>average_wd</i>	<i>valid_tp</i>	<i>valid_rh</i>	<i>valid_dp</i>	<i>valid_tot_solar</i>	<i>valid_press</i>	<i>valid_sigmeteta</i>	<i>valid_precip</i>	<i>valid_horiz_visibility</i>
SBEN2MH	CI	646.03	4079.726	San Benito 2 Meter Height	100	100	100	100	100	100	100	100	100	100	98	
SBU	AR	786.971	3811.998	Santa Barbara Stn (UC W Campus - Exxon)	100	100	100	100								
SCFS	AR	910.741	3813.98	Santa Clarita Stn (County Fire Station)	100	100	100	100								
SCK	NW	653.863	4195.958	Stockton Metropolitan Airport Stn	52		50		98	98	98	98				98
SCQ	AR	589.619	4093.568	Santa Cruz Stn (2544 Soquel Dr)					100							98
SDP	AR	642.086	4274.956	Sacramento Stn (Del Paso Manor)		88	88		100	100		95				
SFO	NW	554.453	4163.263	San Francisco International Arpt. Stn	100		100		100	100	100	100				100
SGS	AR	704.292	4230.373	San Andreas Stn (Gold Strike Rd.)		100	100		100							
SHA	AR	838.553	3934.703	Shafter Stn (Walker St.)		100	100		100							
SHAD	RA	861.981	4054.279	SHADEQUARTER	94		100		100	100		99			100	
SHAV	RA	832.382	4117.247	SHAVER		88	100		100	100		100			100	
SHC2MH	CI	837.235	3938.32	Shafter Stn (USDA) 2 Meter Height	97				100	100	100	100				
SHE2MH	CI	691.441	4265.924	Shenandoah Valley 2 Meter Height	100	100	100		100	100	100	100			100	
SIM	AR	897.354	3801.157	Simi Valley Stn	85	85	85	85	85	85	85	85				
SIM2	RA	553.209	4546.143	SIMS	69		74		74	74						74
SIMM	AR	886.879	3802.295	Simi Valley Stn (2801 Madera R					100	100		100	100			
SIMU	AR	850.109	4223.063	Simus Res-Hwy 167 Mono Lake Stn	100		100		100	100						
SJC2MH	CI	593.028	4131.35	San Jose_CIMIS 2 Meter Height	100	100	100		100	98	98	100			100	
SVJ2MH	CI	636.679	4076.142	San Juan Valley 2 Meter Height	92	92	100		100	100	100	100			100	
SKP18MH	PG	858.602	3915.252	Stockdale Stn 18 Meter Height	100		100		100							100
SL2	AR	622.117	4061.951	Salinas #2 Stn (Nativdad Rd.)	30		30	30								
SLA2	RA	470.603	4634.513	SLATER BUTTE	90		93		93	93						93
SLB2MH	CI	712.756	3909.291	San Luis Obispo_CIMIS 2 Meter Height	95	95	100		97	97	97	100			99	
SLF10MH	PG	708.377	3905.859	San Luis Obispo Stn (Foothill Rd.) 10 Me	74		74		74							74
SLK	AR	877.884	4054.964	Sequoia Stn (Giant Forest)	100	100	100		100	100		64				
SLM	AR	713.359	3906.853	San Luis Obispo Stn (Marsh)		100	100		100				100			
SLS15MH	PG	711.389	3901.601	San Luis Obispo Service Center Stn 15 Me	100		100		100						100	
SMR10MH	PG	732.499	3866.709	Santa Maria_PGE Stn 10 Meter Height	100		100		100						100	
SMY	AR	734.332	3870.097	Santa Maria Stn (Broadway)					100							
SNB	AR	730.199	4206.821	Sonora Stn (251 S Barretta St.)		100	100		100							
SNC2MH	CI	616.906	4064.075	Salinas North 2 Meter Height	93	93	100		100	100	100	100			100	
SODA	RA	501.437	4364.653	SODA CREEK	85		100		100	100					100	
SOH	AR	652.099	4201.506	Stockton Stn (Hazelton St.)		100	100		100	100						
SOM	AR	662.905	4196.899	Stockton Stn (13521 E Mariposa)		100	100		100	100						
SOM2	RA	459.929	4580.751	SOMES BAR	96	99		99	99	99						99
SPA15MH	PG	531.033	4352.141	Spaulding Power House 15 Meter Height	99		99		99						99	
SRA2MH	CI	517.551	4250.121	Santa Rosa 2 Meter Height	100	100	100		99	99	99	100			100	
SSC2MH	CI	630.107	4053.613	Salinas South 2 Meter Height	100	100	100		100	100	100	100			100	
SST	AR	634.365	4268.228	Sacramento Health Dept. Stn (S					100							
STA2	RA	753.151	4374.339	STAMPEDE	78		89		89	89	89	49			97	
STF2MH	CI	783.385	4005.871	Stratford 2 Meter Height	92	92	92		92	92	92	92			92	
STO1	RA	538.756	4359.201	STONEYFORD PORTABLE	91		99		99	99						99
SUIS2MH	CI	522.758	4230.716	Suisun Valley 2 Meter Height	100	100	100		100	99	99	100			100	
SVC2MH	CI	492.031	4314.686	Sanel Valley 2 Meter Height	100	100	100		100	100	100	100			100	
SVEL	AR	706.285	4472.559	Scotts Valley Stn (Erby Lane)					96							
SVS2MH	NO	693.63	4132.774	Stevinson 2 Meter Height					92	92	92	92			92	
SYC2MH	CI	768.031	3830.486	Santa Ynez 2 Meter Height	100	100	100		100	91	91	100			100	
SYN	AR	768.609	3832.701	Santa Ynez Airport Stn	100	100	100	100	100							
TABM15MH	PG	616.853	4378.488	Table Mountain 15 Meter Height	100		100		100						100	
TEF	AR	738.372	3879.108	Nipomo Stn (Teft and Pomeroy St.)		100	100		100	100	100	100				
THM	AR	880.678	3792.969	Thousand Oaks Stn (Moorpark Rd.)	100	100	100	100	100	100	100	100				
THOM	RA	533.387	4411.616	THOMES CREEK	99		100		100	100	100	100			100	
TJP10MH	NO	874.347	3867.686	Tejon Pass 10 Meter Height	92	70	70		92	92	0				92	
TJP2MH	NO	874.347	3867.686	Tejon Pass 2 Meter Height					98	98	98	98			98	98
TMR10M	NO	829.136	4090.162	Trimmer 10 Meter Height	55	55	55									54
TMR2M	NO	829.136	4090.162	Trimmer 2 Meter Height					66	66	66	66			66	
TPP	AR	629.13	4177.563	Tracy Stn (24371 Patterson Pass)		100	100		100							
TREN	RA	858.288	4231.424	TRENCH 1	99		100		100	100					100	
TRIN	RA	514.105	4502.915	TRINITY CAMP	87		99		99	98		98			99	
TRON	AR	1006.838	3972.064	Trona Stn (Athol and Telegraph)	33		33	33	33	33					33	

Table 1. CRPAQS Meteorological Measurements Inventory: Dec 1999 – Feb 2000 (cont.)

<i>support_code</i>	<i>data_source</i>	<i>utme_z10</i>	<i>utmn_z10</i>	<i>support_name</i>	<i>scalar_ws</i>	<i>vector_ws</i>	<i>resultant_wd</i>	<i>average_wd</i>	<i>valid_tp</i>	<i>valid_rh</i>	<i>valid_dp</i>	<i>valid_tot_solarad</i>	<i>valid_press</i>	<i>valid_sigmatheta</i>	<i>valid_precip</i>	<i>valid_horiz_visibility</i>
TSM	AR	690.965	4151.219	Turlock Stn (900 S Minaret)	100			100								
TWI2MH	CI	617.634	4219.408	Twitchell Island 2 Meter Height	83	83	83		83	83	83	83	83			
UHLR	RA	897.694	3970.509	UHL/HOTSPRINGS	84		99		99	99				99		
VAN2	RA	601.056	4609.939	VAN BREEMER	94		96		96	96		78		96		
VBS	AR	716.804	3830.442	Vandenberg STS Power Plant Stn	100	100	100	100	100							
VCD10MH	PG	594.476	4251.1	Vacaville/Dixon Stn 10 Meter Height	100		100		100					100		
VCS	AR	832.942	4027.017	Visalia Stn (Church St.)		100	100		100				100			
VIA	AR	1024.578	3783.486	Victorville/Armagosa Stn	34			34	34			34	34			
VIX	AR	823.939	4024.607	Visalia Airport Stn		98	98		98	98		98	82			
VLA2MH	CI	839.196	4023.758	Visalia/ICI Americas 2 Meter Height	100	100	100		100	100	100	100		100		
VTA	AR	829.552	3810.686	Ventura Co./W Casitas Pass Stn		100	100		100							
VTE	AR	839.327	3800.27	Ventura Stn (Emma Wood St. BE.)	100	100	100	100	100	100		100				
WAA	AR	631.059	4079.038	Watsonville (444 Airport) Stn	100		100		100							
WALK	RA	947.578	3957.833	WALKER PASS	95		96		96	96		96		96		
WAR1	RA	908.274	3835.648	WARM SPRINGS	99		100		100	100				100		
WDC2MH	CI	514.964	4279.742	Windsor 2 Meter Height	100	100	100		99	99	99	100		100		
WEAV	RA	504.644	4509.13	WEAVERVILLE	80		99		99	99		99		99		
WFD10MH	NO	705.283	4169.658	Waterford 10 Meter Height	98	34	34							98		
WHI2	RA	686.069	4353.935	WHITE CLOUD	90		90		99	99		98		99		
WIN2MH	CI	589.161	4261.737	Winters 2 Meter Height	100	100	100		100	92	92	100		100		
WLC2MH	CI	734.083	4057.151	Westlands 2 Meter Height	100	100	100		100	100	100	100		100		
WLW	AR	654.02	4375.897	Willows Stn (E Laurel St.)		100	100		100	100						
WNC2MH	CI	580.695	4196.465	Walnut Creek 2 Meter Height	94	94	100		100	94	94	100		100		
WOLV	RA	885.18	4041.695	WOLVERTON	96		99		99	99				99		
WWOL	RA	794.764	4194.38	WHITE WOLF	90		99		99	99				99		
YAS	AR	619.441	4332.892	Yuba City Stn (Almond St.)		100	100		100							
YOT	AR	790.551	4178.916	Yosemite NP/Turtleback Dome Stn	99	99	99		99	99		99				
ZOR2MH	CI	594.817	4295.829	Zamora 2 Meter Height	100	100	100		100	100	100	100		100		

Table 2. CRPAQS Meteorological Measurements Inventory: Nov 2000 – Feb 2001

<i>support_code</i>	<i>data_source</i>	<i>utme_z10</i>	<i>utmn_z10</i>	<i>support_name</i>	<i>scalar_ws</i>	<i>vector_ws</i>	<i>resultant_wd</i>	<i>average_wd</i>	<i>valid_ip</i>	<i>valid_rh</i>	<i>valid_dp</i>	<i>valid_tot_solar</i>	<i>valid_press</i>	<i>valid_sigmetra</i>	<i>valid_precip</i>	<i>valid_horiz_visibility</i>
ABU10MH	NO	665.004	4337.171	No. of Auburn/Grass Valley 10 Meter Heig	76	76	76						76			
ABU2MH	NO	665.004	4337.171	N. of Auburn/S. of Grass Valle					76	76	0	76	76	76	76	
AGA2MH	CI	589.338	4094.918	De Laveaga 2 Meter Height.	100	100	100		100	100	100	100	100			
ALDR	RA	523.594	4388.739	ALDER SPRINGS	99		99		99	99					99	
ALTR10MH	NO	635.655	4180.098	Altamont Pass Stn10 Meter Height	76	76	76							76		
ALTR2MH	NO	635.655	4180.098	Altamont Pass 2 Meter Height		76	76		76	76		76	76	76	76	
AND	AR	527.1	4292.546	Anderson Springs Stn	99			99	99	99						
ARA2MH	CI	799.933	3815.361	Santa Barbara 2 Meter Height	100	100	100		100	100	100	100	100		100	
ARB	AR	578.701	4318.349	Arbuckle Stn (Hillgate Rd 2W)		99	99		99							
ARBU	RA	515.98	4471.772	ARBUCKLE	100		100		100	100		100			100	
ARR	AR	720.739	3880.391	Arroyo Grande/Ralcoa Stn	100		100									
ARRO	RA	733.845	3897.148	ARROYO GRANDE	100		100		100	100		100		100		
ARSR	RA	635.552	4010.313	ARROYO SECO (MT. DIABLO)	100		100		100	100		100		100		
ARV	AR	883.865	3904.096	Arvin Stn		100	100		100	100		100		100		
ARVE2MH	CI	884.423	3903.864	Arvin-Edison 2 Meter Height	100	100	100		100	99	99	100	100	100		
ASHC	RA	585.701	4569.944	ASH CREEK	99		99		99	99				99		
ASHV	RA	694.462	4546.886	ASH VALLEY	100		100		100	100		100		100		
ATAS2MH	CI	713.59	3927.736	Atascadero 2 Meter Height	77	77	77		77	77	77	77	77	77		
ATC2MH	CI	710.624	4590.236	Alturas 2 Meter Height	98	98	100		100	100	100	100	100	100		
ATL	AR	711.542	3929.874	Atascadero Stn (Lewis Ave.)	97	97	97		97							
BAC	AR	857.839	3919.52	Bakersfield Stn (5558 California Ave)	82	82		95	98		99	99				66
BALR	RA	699.685	4308.614	BALD MOUNTAIN LOCATION	66		66		66	66		65				66
BAY	BA	546.45	4220.498	Sonoma Bayland Stn	79	79	79		79				79			
BEAC	RA	733.317	4263.179	BEAVER PEAK LOC	98		98		98	98				98		
BEAR	RA	946.815	3982.23	BEAR PEAK	100		100		100	100		100		100		
BEL10MH	PG	674.343	4209.135	Bellota Stn 10 Meter Height	100		100		100					100		
BENN2MH	CI	529.943	4252.155	Bennett Valley 2 Meter Height	99	99	99		99	99	99	99	99	99		
BENT	RA	897.994	4197.849	BENTON	77		77		77	77		68		77		
BGS	AR	862.331	3922.943	Bakersfield Stn (1128 Golden State)	100	100		100	98		100	99				
BHIL	RA	446.817	4549.839	BIG HILL	99		99		99	99		87		99		
BIC2MH	CI	907.135	4144.304	Bishop 2 Meter Height	97	97	100		100	100	100	100	100	100		
BKC2MH	CI	775.423	3949.194	Blackwells Corner 2 Meter Height	100	100	100		100	100	100	100	100	100		
BLUD	RA	723.752	4548.033	BLUE DOOR	100		100		100	100		100		100		
BMF	NW	858.71	3926.229	Bakersfield/Meadows Field Stn	98		96		98	98	98	98	98	98	98	98
BOG2	RA	663.228	4503.551	BOGARD RANGER STATION	99		99		99	99		98		99		
BRG2MH	CI	800.263	3933.923	Belridge 2 Meter Height	99	99	100		100	100	100	100	100	100		
BRMR	RA	765.583	3897.69	BRANCH MOUNTAIN					99	99					99	
BRVA2MH	CI	638.414	4244.132	Browns Valley 2 Meter Height	100	100	100		100	100	100	100	100	100		
BRY2MH	CI	627.114	4273.126	Bryte 2 Meter Height	99	99	100		100	100	100	100	100	100		
BSE10MH	NO	869.39	3918.379	Bakersfield (Southeast) 10 Meter Height	76	76	76		76	76				76		
BSE2MH	NO	869.39	3918.379	Bakersfield (Southeast) 2 Mete					76	76		76	76	67		
BSW	AR	1046.471	3877.421	Barstow Stn	51			51	51							
BTW2MH	CI	617.855	4198.58	Brentwood 2 Meter Height	100	100	100		100	100	100	100	100	100		
BULL	RA	744.643	4484.914	BULL FLAT	100		100		100	100		100		100		
BWC2MH	CI	1050.171	3876.561	Barstow 2 Meter Height	100	100	100		100	100	100	100	100	100		
CA1	AR	771.288	3820.222	Capitan Stn/Las Flores Canyon #1	99	99	99	99	99							
CAL2	RA	516.74	4573.566	CALLAHAN	100		100		100	99		100		100		
CAMA2MH	CI	869.056	3794.95	Camarillo 2 Meter Height	92	92	100		100	100	100	100	100	100		
CANB	RA	678.149	4588.941	CANBY	100		100		100	100					100	
CARD	RA	620.882	4436.124	CARPENTER RIDGE	100		100		100	100		100		100		
CCO10MH	NO	593.2888	4394.151	Chico 10 Meter Height	76	76	76		71	69				76		
CCO2MH	NO	593.2888	4394.151	Chico Stn					71	66		76	32	76		
CCR	NW	583.433	4203.816	Concord/Buchanan Stn	80		76		80	80	80	80	80	80	80	80
CCW18MH	PG	608.764	4207.998	Contra Costa Power Plant Stn 18 Meter He	100		100		100					100		
CHES	RA	650.015	4460.607	CHESTER	99		99		99	99					99	
CHM	AR	598.772	4401.147	Chico Stn (Manzanita)		100	100		100	100				100		
CHOW10MH	NO	745.017	4110.543	Chowchilla 10 Meter Height	76	76	76		76	76				76		
CHOW2MH	NO	745.017	4110.543	Chowchilla Stn					76	76		76	76	76	76	

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CHUC	RA	864.824	3858.841	CHUCHUPATE	97		97		97	97				97		
CLO	AR	792.905	4079.674	Clovis Stn (908 N Villa Ave.)	98	47	47	98	100	92	100	100	100			
CLU2MH	CI	584.247	4342.102	Colusa 2 Meter Height	98	98	100		100	100	100	100		100		
CMO2MH	CI	696.998	4291.711	Camino 2 Meter Height	95	95	100		100	100	100	100		100		
CMV	AR	613.508	4037.901	Carmel Valley Stn (Ford Road)					100							
CNR2MH	CI	556.55	4230.105	Carneros 2 Meter Height	100	100	100		100	100	100	100		100		
COL2	RA	504.297	4624.861	COLLINS BALDY	99		99		99	99					99	
CON	BA	585.236	4199.396	Concord Stn	79	79	79		79	79	79			79		
COOS	RA	393.699	4456.966	COOSKIE MOUNTAIN	99		99		99	99			99		58	
COP	AR	809.178	4000.549	Corcoran Stn (Patterson)	49	99	99	49	99					99		
CORN	RA	570.94	4421.096	CORNING	100		100		100	100			99		100	
CORR	RA	606.98	4094.668	CORRALITOS	100		100		100	100			99		100	
COUL	RA	550.913	4318.83	COUNTY LINE	100		100		100	100			100		100	
CRP	AR	825.804	3812.532	Carpinteria Stn (Gobernador Rd.)	100	100	100	100								
CSS	AR	584.879	4339.534	Colusa Stn (100 Sunrise Blvd.)	100		100		100					100		
CTV2MH	CI	609.42	4069.635	Castroville 2 Meter Height	99	99	100		100	100	100	100		100		
CUY2MH	CI	810.126	3870.57	Cuyama 2 Meter Height	100	100	100		100	98	98	100		100		
DAV2MH	CI	606.682	4265.791	Davis 2 Meter Height	98	98	100		100	100	100	100		100		
DELO	RA	897.325	3944.909	DELONAGHA	100		100		100	100					100	
DEVp	RA	844.791	4171.743	DEVILS POST PILE	99	99	99		99	99					99	
DIXO2MH	CI	605.9	4252.352	Dixon 2 Meter Height	98	98	100		100	100	99	100		100		
DOYL	RA	747.01	4434.025	DOYLE	100		100		100	100	100	100		100		
DSX	AR	952.958	4031.625	Dirty Sox/Hwy 109 Stn	100											
DUR2MH	CI	601.043	4384.814	Durham 2 Meter Height.	100	100	100		100	100	100	100		100		
DVL	AR	1049.44	4057.692	Death Valley IMPROVE Stn	99	99	99		98	96			96			
DVP	AR	571.765	4096.298	Davenport Stn	98		98	98								
DVS	AR	606.773	4265.493	Davis/UCD Campus Stn	100	100	100		100							
ECHO	AR	757.681	4299.847	Echo Summit Stn (21200 HWY 50)	100	100	100		100							
ECO2MH	CI	653.427	4024.924	Arroyo Seco_CIMIS 2 Meter Height.	100	100	100		100	100	100	99		100		
ECP	AR	773.109	3817.066	El Capitan Beach Stn	100	100	100	100	100							
EDS	AR	877.121	3919.134	Edison Stn	100		100		100							
EELR	RA	492.872	4409.049	EEL RIVER	100		100		100	100					100	
ELK	AR	637.982	4240.284	Elk Grove Stn (Bruceville Rd.)	98	98	98		99	98			99	99		
ELM	AR	856.011	3798.146	El Rio Mesa School #2 Stn	26	26	26	26	26	26			26			
ELMI	RA	999.776	3845.837	EL MIRAGE	100		100		100	100			100		100	
FAMO2MH	CI	843.101	3946.435	Famoso 2 Meter Height	99	99	100		100	99	99	100		100		
FAT	NW	792.988	4075.66	Fresno Air Terminal Stn	64		64		64	64	64	64		64		64
FAT10MH	NO	792.988	4075.66	Fresno Air Terminal 10 Meter Height	76	76	76		75	73					76	
FIV2MH	NO	759.129	4024.886	Fivepoints/WSFS USDA 2 Meter Height	59	59	69		76	47			76	48	76	
FLAT	CI	963.071	4042.951	Flat Rock Stn (Highway 190)	40		40	59	59	59	59	59		69		
FLN	AR	659.811	4283.094	Folsom Stn (Natoma St.)	100	100	100		100	100			100			
FNS2MH	CI	790.614	4079.768	Fresno State 2 Meter Height	94	94	100		100	100	100	100		100		
FOC2MH	CI	655.185	4279.306	Fair Oaks 2 Meter Height	99	99	100		100	100	100	100		100		
FORK	RA	810.378	4126.109	NORTH FORK	99	99	99		99	99			99		99	
FRB2MH	CI	714.873	4080.852	Firebaugh/Telles 2 Meter Height	100	100	100		100	100	100	100		100		
FSF	AR	787.965	4075.308	Fresno Stn (3425 First St.)	100	73	73		198	174			100	198	100	
FSS	AR	778.761	4081.671	Fresno Stn (Sierra Skypark #2)	100	100	100	100	100							
FTF	BA	544.069	4174.107	Ft. Funston Stn	79	79	79		79	70	70			79		
FULT10MH	PG	520.992	4236.703	Fulton Tower 10 Meter Height	100		100		100						100	
GCL	AR	710.283	3889.271	Grover City Stn (Lesage Drive)	100		100									
GEC2MH	CI	939.461	3794.395	Glendale 2 Meter Height	95	95	100		100	100	100	100		100		
GEN	AR	759.301	3819.879	Gaviota East Stn (odor)	100	99	99	99	97							
GHOP	RA	687.48	4516.499	GRASSHOPPER	100		100		100	100			99		100	
GLA10MH	NO	789.814	3814.085	Goleta 10 Meter Height	67	67	67							67		
GLA2MH	NO	789.814	3814.085	Goleta 2 Meter Height									67	67	67	
GLH	AR	521.087	4299.796	Glenbrook Stn (High Valley Rd.)	99		99	99								
GNF	AR	792.499	3815.924	Goleta Stn (N Fairview Ave.)	100	100	100	100	100	84			100			
GRG10MH	PG	774.524	4082.9	Gregg Stn 10 Meter Height	100		100									
GRI	AR	614.897	4353.792	Gridley Stn (608 Cowee Rd.)	100	100	100		100	100						
GVB	AR	757.375	3824.022	Gaviota TC-Site B Stn	100	100	100	100	100							

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GVR2MH	CI	609.797	4088.834	Green Valley Rd. 2 Meter Height	99	99	100	100	100	100	100	100	100	100	100	
GWN	AR	773.535	3818.244	Gaviota West Stn (odor)	100	100	100	100	100	100	100	100	100	100	100	
HAMM	AR	904.496	4178.838	Hammill Valley Stn (693 Rawson Ranch Rd)	70	70	64	70	64	64	64	64	64	64	64	
HAST2MH	CI	605.83	4237.701	Hastings Tract 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
HEL1	RA	740.497	4290.609	HELL HOLE	99	99	99	99	99	99	99	99	99	99	99	
HER10MH	PG	774.378	4081.896	Herndon Stn 10 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
HES	AR	1025.418	3822.913	Hesperia Stn (Olive Street)	99	99	99	99	99	99	99	99	99	99	99	
HFS2MH	CI	492.295	4318.126	Hopland FS 2 Meter Height	99	99	99	99	99	99	99	99	99	99	99	
HOB	AR	522.561	4300.111	Hobergs Stn (NW of Pine Summit 1 mi.)	98	98	98	98	98	98	98	98	98	98	98	
HOOP	RA	443.414	4544.125	HOOPA	100	100	100	100	100	100	100	100	100	100	100	
HORS	RA	711.202	4500.538	HORSE LAKE	100	100	100	100	100	100	100	100	100	100	100	
HOTS	RA	1141.458	3981.577	HORSE THIEF SPRINGS	100	100	100	100	100	100	100	100	100	100	100	
HST	AR	646.138	4078.64	Hollister Stn (1979 Fairview)	100	100	100	100	100	100	100	100	100	100	100	
HUNT	RA	994.756	4060.378	HUNTER MOUNTAIN	99	99	99	99	99	99	99	99	99	99	99	
HURL	RA	804.434	4102.176	HURLEY	100	100	100	100	100	100	100	100	100	100	100	
JAC	AR	695.509	4245.702	Jackson Stn (201 Clinton Road)	100	100	100	100	100	100	100	100	100	100	100	
JAWB	RA	934.21	3915.992	JAWBONE	99	98	98	98	98	98	98	98	98	98	98	
JOHN	RA	901.798	3989.795	JOHNSONDALE	96	96	96	96	96	96	96	96	96	96	96	
JOR2	RA	647.174	4403.366	JORDAN CREEK	98	98	98	98	98	98	98	98	98	98	98	
JSN	AR	1110.383	3789.643	Joshua Tree National Monument	100	100	100	100	100	100	100	100	100	100	100	
JUA2	RA	582.632	4626.292	JUANITA LAKE	54	54	54	54	54	54	54	54	54	54	54	
JUNI	RA	711.51	4578.505	JUNIPER CREEK	100	100	100	100	100	100	100	100	100	100	100	
KCG	AR	959.638	4050.096	Keeler Stn (Cerro Gordo Rd.)	77	77	77	77	77	77	77	77	77	77	77	
KCO2MH	CI	672.434	3998.868	King City (Oasis Rd.) 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
KES2MH	CI	688.068	4122.622	Kesterson 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
KET2MH	CI	780.449	3973.675	Kettleman 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
KETT	RA	765.82	3991.069	KETTLEMAN HILLS	100	100	100	100	100	100	100	100	100	100	100	
KNO2	RA	550.565	4301.439	KNOXVILLE CREEK	100	100	100	100	100	100	100	100	100	100	100	
KRE	BA	596.656	4199.856	Kregor Peak Stn	79	79	79	79	79	79	79	79	79	79	79	
KRVM10MH	NO	829.185	4090.2	Kings River Powerhouse 10 Meter Height	76	76	76	76	76	76	76	76	76	76	76	
KRVM2MH	NO	829.185	4090.2	Kings River Powerhouse 2 Meter	100	100	100	100	100	100	100	100	100	100	100	
LAD2	RA	643.34	4517.889	LADDER BUTTE	94	94	94	94	94	94	94	94	94	94	94	
LAUF	RA	726.128	4446.119	LAUFMAN	100	100	100	100	100	100	100	100	100	100	100	
LBP15MH	PG	676.153	4102.384	Los Banos_PGE Stn 15 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
LCV2MH	CI	853.677	4030.562	Lindcove 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
LEA10MH	PG	575.17	4173.81	San Leandro 10 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
LEEV	AR	840.456	4208.043	Lee Vining-Hwy 395 Stn	100	100	100	100	100	100	100	100	100	100	100	
LFC	AR	788.193	3814.471	Las Flores Canyon Stn (12100 Calle Real)	25	25	25	25	25	25	25	25	25	25	25	
LHS	AR	735.516	3845.33	Lompoc Stn(HS & P)	100	100	100	100	100	100	100	100	100	100	100	
LHSP10MH	AR	800.026	3946.902	Lost Hills 10 Meter Height	66	66	66	66	66	66	66	66	66	66	66	
LHSP2MH	AR	800.026	3946.902	Lost Hills 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
LINC	RA	650.207	4304.955	LINCOLN	99	99	99	99	99	99	99	99	99	99	99	
LIVE	RA	604.573	4174.308	LIVERMORE	92	92	92	92	92	92	92	92	92	92	92	
LKGR	AR	1027.588	3803.867	Lake Gregory-Lake Dr. Crestli	100	100	100	100	100	100	100	100	100	100	100	
LMK	AR	879.948	4039.702	Mineral King Lookout Point Stn	65	65	65	65	65	65	65	65	65	65	65	
LMP	AR	735.203	3844.667	Lompoc Stn (HS&P #2 odor)	95	95	95	95	95	95	95	95	95	95	95	
LNP	AR	620.686	4488.026	Lassen Volcanic NP Stn - IMPROVE	99	99	99	99	99	99	99	99	99	99	99	
LOD2MH	CI	645.01	4218.995	Lodi 2 Meter Height	62	62	65	65	65	65	65	65	65	65	65	
LODI2MH	CI	641.725	4221.268	Lodi West 2 Meter Height	79	79	89	89	89	89	89	89	89	89	89	
LOM	AR	733.196	3835.592	Lompoc Stn (128 South H St.)	100	100	100	100	100	100	100	100	100	100	100	
LONE	AR	942.955	4062.56	Lone Pine Stn (Sewer Ponds)	100	100	100	100	100	100	100	100	100	100	100	
LOPR	RA	795.24	3826.072	LOS PRIETOS	100	100	100	100	100	100	100	100	100	100	100	
LOST2MH	CI	794.043	3959.121	Lost Hills NW 2 Meter Height	100	100	100	100	100	100	100	100	100	100	100	
LPD	AR	794.701	3826.555	Los Padres NF Stn (Paradise Rd.)	100	100	100	100	100	100	100	100	100	100	100	
LTY	AR	762.695	4314.835	South Lake Tahoe Stn (3337 Sandy)	100	100	100	100	100	100	100	100	100	100	100	
LVK	NW	604.026	4172.98	Livermore Municipal AP NWS Stn	88	85	85	88	88	88	88	88	88	88	88	
LWP	AR	946.448	3849.321	Lancaster Stn (W. Pondera St.)	51	51	51	51	51	51	51	51	51	51	51	
LYON	RA	493.975	4329.854	LYONS VALLEY	100	100	100	100	100	100	100	100	100	100	100	
M14	AR	676.949	4167.776	Modesto Stn (814 14th St.)	100	100	100	100	100	100	100	100	100	100	100	
M29	AR	766.543	4084.057	Madera Stn (29 1/2 No. of Ave 8)	49	98	98	49	100	51	100	51	100	51	100	

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MAG	AR	855.927	4172.581	Mammoth Lakes/Gateway HC Stn	100											
MAN2	RA	621.664	4488.842	MANZANITA LAKE	100	100										100
MAN2MH	CI	656.375	4188.791	Manteca 2 Meter Height	99	99	100									
MAR2	RA	800.113	4156.975	MARIPOSA GROVE	100	99										100
MBP	AR	726.58	3902.302	Morro Bay Stn		100	100									
MBW15MH	PG	694.951	3916.435	Morro Bay Power Plant Stn 15 Meter Heigh	99	99										99
MCA18MH	PG	800.801	4056.787	McCall Stn 18 Meter Height	100		100									100
MCS	AR	828.006	3884.772	Maricopa School/Stanislaus Stn			95	95								
MDC2MH	CI	750.292	4100.345	Madera 2 Meter Height	100	100	100		100	100	100	100				100
MDT2MH	CI	660.059	4166.772	Modesto 2 Meter Height	92	92	95		95	91	91	92				95
MERC2MH	CI	731.617	4132.661	Merced 2 Meter Height	99	99	99		99	99	99	99				99
MHC2MH	CI	621.244	4112.337	Morgan Hill 2 Meter Height	100	100	100		100	100	100	100				100
MID10MH	PG	822.158	3923.096	Midway Stn 10 Meter Height	100		100									
MID2	RA	1192.136	3912.959	MID HILLS	100		100		100	100	100	100				100
MJV10MH	NO	942.274	3889.517	Mojave 10 Meter Height	76	76	76		76	76					76	
MJV2MH	NO	942.274	3889.517	Mojave 2 Meter Height					76	76	76	76				76
MLNS	AR	855.508	4221.321	Mono Lake North Shore Stn	100		100	100								
MLP15MH	PG	609.276	4073.96	Moss Landing Power Plant Stn 15 Meter He	100		100		100							100
MLS	AR	608.316	4073.659	Moss Landing Stn (Sand Holt)	94		94	94								
MOD	NW	680.899	4166.536	Modesto City/Sham Stn	99		97		99	99	91		91			99
MOJ2	RA	1130.732	3900.263	MOJAVE RIVER SINK	99		99		99	99	99					99
MOP	AR	942.642	3889.23	Mojave Stn (923 Poole St.)		100	100		100						100	
MRA	AR	727.58	4129.097	Merced Stn (385 S Coffee St.)	100	49	49	100	95							
NAP	BA	561.251	4233.579	Napa Stn(Jefferson Ave)	79	79	79		79	79	79				79	
NAT	AR	629.395	4277.33	Sacramento/Natoma Stn (3801 Airport Rd.)	99	99			99	98						
NGR	AR	722.443	3877.869	Nipomo Stn (1300 Guadalupe Rd.)		100	100		100							
NIC2MH	CI	626.226	4230.26	Nicolaus 2 Meter Height	98	98	100		100	100	100	100				100
NLC	NW	773.785	4024.669	Lemoore NAS/Reeves Stn	45		43		44	44	43		44			44
NML10MH	NO	719.934	4209.348	New Melones Lake 10 Meter Height	76	76	76								76	
NML2MH	NO	719.934	4209.348	New Melones Lake Stn					76	76	0	64	76		76	
NOS2MH	CI	699.085	4107.223	Los Banos 2 Meter Height	90	90	91		91	91	91	91				91
NVC2MH	CI	540.058	4219.133	Novato 2 Meter Height	100	100	100		100	98	98	100				100
OAK3	RA	429.771	4631.711	OAK KNOLL	98		98		98	98						98
OAKC	RA	922.815	4087.7	OAK CREEK	40		40		40	39						41
OAKN	RA	568.89	4192.03	OAKLAND NORTH	100		100		100	100						100
OAKO	RA	886.06	4011.79	OAK OPENING	100		100		100	100						100
OAKS	RA	573.814	4182.453	OAKLAND SOUTH	100		100		100	100						100
OCO2MH	CI	822.64	4069.784	Orange Cove 2 Meter Height	92	92	92		92	92	92	92				92
OHC2MH	CI	572.307	4181.607	Oakland Foothills 2 Meter Height	100	100	100		100	100	100	100				100
OJO	AR	845.088	3814.56	Ojai Stn (Ojai Rd.)	51	51	51	51	51	51	0	51				
OKV2MH	CI	551.495	4253.928	Oakville 2 Meter Height	99	99	100		100	100	100	100				100
OLD	AR	861.617	3928.72	Oildale Stn (3311 Manor)		100	100		100							
OLW	AR	949.942	4025.096	Olancha Stn (Walker Creek Rd.)	100		100	100	100						100	
OPAL	RA	1030.809	3905.511	OPAL MOUNTAIN	100		100		100	100		100				100
ORL2MH	CI	572.712	4393.707	Orland 2 Meter Height	99	99	100		100	100	100	100				100
OWE2	RA	739.48	4290.578	OWENS CAMP LOC	99		99		99	99						99
PAC110MH	NO	658.088	4104.283	Pacheco Pass 10 Meter Height	76	76	76									76
PAC12MH	NO	658.088	4104.283	Pacheco Pass 2 Meter Height					76	76	76	76				76
PAJA2MH	CI	612.079	4084.648	Pajaro 2 Meter Height	100	100	100		100	100	100	100				100
PAN2	RA	1032.243	4012.16	PANAMINT	93		93		93	93						93
PANO2MH	CI	702.108	4084.869	Panoche 2 Meter Height	100	100	100		100	100	100	100				100
PAQ10MH	PG	594.654	4210.319	Pittsburg AQ Stn 10 Meter Height	100		100		100							100
PATS2MH	CI	664.637	4145.106	Patterson 2 Meter Height	100	100	100		100	100	100	100				100
PATT	RA	511.33	4460.298	PATTY MOCUS	99		99		99	99						99
PETE2MH	CI	533.592	4235.303	Petaluma East 2 Meter Height	99	99	100		100	100	100	100				100
PGN	AR	689.681	4288.557	Placerville Stn (Gold Nugget)		100	100		100							
PGV	AR	629.103	4291.751	Pleasant Grove Stn (4 SW)		100	100		100	100						
PIER	RA	674.658	4444.357	PIERCE	91		91		91	91						91
PIK2	RA	656.282	4369.935	PIKE COUNTY LOOKOUT	100		100		100	100						100
PIN	AR	665.006	4039.087	Pinnacles National Monument Stn	100	100	100		98	100		94				

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PIRU	AR	883.968	3814.038	Piru Stn (3301 Pacific Avenue)	43	42	43	43	43	43	43	43				
PLE	BA	596.091	4172.884	Pleasanton Stn	79	79	79	79					79			
PLR	AR	812.388	4055.978	Parlier Stn	75	49	49	100	100	100	100	100	100	100		
PORT2MH	CI	851.951	3999.807	Porterville 2 Meter Height	99	99	100		100	100	100	100		100		
PRC2MH	CI	887.296	3811.585	Piru 2 Meter Height	100	100	100		99	99	99	100		100		
PRF	AR	709.182	3945.358	Paso Robles Stn (235 Santa Fe)		100	100		100							
PRL2MH	CI	812.844	4055.773	Parlier Stn (CIMIS) 2 Meter Height	99	99	100		100	100	100	100		100		
QUI1	RA	680.517	4437.097	QUINCY ROAD	98	98			98	98					98	
RICX10MH	NO	552.377	4199.641	Richmond Tower 10 Meter Height	76	76	76							76		
RICX2MH	NO	552.377	4199.641	Richmond Tower 2 Meter Height					76	76	76	76		76		
ROC	AR	654.86	4294.653	Rocklin Stn (5000 Rocklin Rd.)		100	100		100							
ROCK	RA	882.818	4164.671	ROCK CREEK	99	99			99	99			99		99	
ROS	AR	650.782	4289.79	Roseville Stn (151 N Sunrise)		100	100		100	100	100	100		100		
ROSE	RA	850.224	3828.799	ROSE VALLEY	99	99			99	99					99	
ROSP	RA	611.763	4151.098	ROSE PEAK	91	92			92	92			92		92	
RUSH	RA	678.858	4573.427	RUSH CREEK	100	100			100	100					100	
S13	AR	631.261	4269.745	Sacramento Stn (1309 T St.)		92	92		100	100			82	92		
SAC	NW	630.773	4264.006	Sacramento Executive Airport Stn	90	89			90	90	90		90		90	
SALH	AR	620.89	4059.026	Salinas Stn (High School)	98		98	100								
SAW2	RA	489.183	4571.856	SAWYERS BAR	100	100			100	100	100	100			100	
SBEN2MH	CI	646.03	4079.726	San Benito 2 Meter Height	97	97	97		97	97	97	97		97		
SBU	AR	786.971	3811.998	Santa Barbara Stn (UC W Campus - Exxon)	74	74	74	74								
SCFS	AR	910.741	3813.98	Santa Clarita Stn (County Fire Station)	99	7	7	99								
SCK	NW	653.863	4195.958	Stockton Metropolitan Airport Stn	54		51		71	71	71		71		71	
SCQ	AR	589.619	4093.568	Santa Cruz Stn (2544 Soquel Dr			100		100	100	100	100				
SCS	BA	566.279	4152.398	San Carlos Stn	79	79	79		79	79	79			79		
SDP	AR	642.086	4274.956	Sacramento Stn (Del Paso Manor)		98	98		98	98	98		99			
SFO	NW	554.453	4163.263	San Francisco International Arpt. Stn	60	60			60	60	60	60		60	60	
SGS	AR	704.292	4230.373	San Andreas Stn (Gold Strike Rd.)		100	100		100							
SHA	AR	838.553	3934.703	Shafter Stn (Walker St.)		100	100		100							
SHAD	RA	861.981	4054.279	SHADEQUARTER	99	99			99	99	99		99		99	
SHAV	RA	832.382	4117.247	SHAVER	98	98			98	98	98		98		98	
SHC2MH	CI	837.235	3938.32	Shafter Stn (USDA) 2 Meter Height	91				100	100	100	100				
SHEL	AR	957.903	4036.684	Shell Cut Stn (Highway 190)	40		40									
SIM	AR	897.354	3801.157	Simi Valley Stn	26	26	25	25	26	26	26					
SIM2	RA	553.209	4546.143	SIMS	99	99			99	99	99				99	
SIMM	AR	886.879	3802.295	Simi Valley Stn					26	26	26	26				
SIMU	AR	850.109	4223.063	Simus Res-Hwy 167 Mono Lake Stn	100		100									
SISQ2MH	CI	754.942	3858.759	Sisquoc 2 Meter Height	98	98	98		97	97	97	98		98		
SJC2MH	CI	593.028	4131.35	San Jose_CIMIS 2 Meter Height	100	100	100		100	99	99	100		100		
SJV2MH	CI	636.679	4076.142	San Juan Valley 2 Meter Height	99	99	100		100	100	100	100		100		
SKP18MH	PG	858.602	3915.252	Stockdale Stn 18 Meter Height	100	100			100							
SLA2	RA	470.603	4634.513	SLATER BUTTE	99	99			99	99	99	99			99	
SLB2MH	CI	712.756	3909.291	San Luis Obispo_CIMIS 2 Meter Height	97	97	97		97	97	97	97		97		
SLF10MH	PG	708.377	3905.859	San Luis Obispo Stn (Foothill Rd.) 10 Me	100	100			100						100	
SLK	AR	877.884	4054.964	Sequoia Stn (Giant Forest)	100	100	100		100	100	100	98				
SLM	AR	713.359	3906.853	San Luis Obispo Stn (Marsh)		100	100		99				100			
SLOW2MH	CI	705.953	4212.352	San Luis Obispo West 2 Meter Height	100	100	100		100	100	100	97		100		
SLS15MH	PG	711.389	3901.601	San Luis Obispo Service Center Stn 15 Me	100	100			100						100	
SLU	AR	656.106	4261.988	Sloughouse Rd. Stn		5	5									
SMAR	AR	734.327	3870.286	Santa Maria Stn (906 S Broadway)		100	100		100							
SMR10MH	PG	732.499	3866.709	Santa Maria_PGE Stn 10 Meter Height	100	100			100					100		
SNB	AR	730.199	4206.821	Sonora Stn (251 S Barretta St.)		97	97		97							
SNC2MH	CI	616.906	4064.075	Salinas North 2 Meter Height	100	100	100		100	100	100	100		100		
SODA	RA	501.437	4364.653	SODA CREEK	100	100			100	100	100				100	
SOH	AR	652.099	4201.506	Stockton Stn (Hazelton St.)		100	97		100	100						
SOM2	RA	459.929	4580.751	SOMES BAR	100	100			100	100					100	
SPAU15MH	PG	531.033	4352.141	Spaulding Power House 15 Meter Height	100	100			100					100		
SRA2MH	CI	517.551	4250.121	Santa Rosa 2 Meter Height	100	100	100		100	81	81	100		100		
SRO	BA	517.464	4250.01	Santa Rosa_BAAQMD Stn	60	60	60		60	46		60				

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SSC2MH	CI	630.107	4053.613	Salinas South 2 Meter Height	100	100	100		100	99	99	99	100			
SST	AR	634.365	4268.228	Sacramento Health Dept. Stn (S					100					99		
STA2	RA	753.151	4374.339	STAMPEDE	99		99		99	99	99	99				
STF2MH	CI	783.385	4005.871	Stratford 2 Meter Height	100	100	100		100	100	99	100		100		
STO1	RA	538.756	4359.201	STONEYFORD PORTABLE	99		99		99	99					99	
SUIS2MH	CI	522.758	4230.716	Suisun Valley 2 Meter Height	100	100	100		100	100	100	100		100		
SVC2MH	CI	492.031	4314.686	Sanel Valley 2 Meter Height	100	100	100		100	100	100	100		100		
SVEL	AR	706.285	4472.559	Scotts Valley Stn (Erby Lane)					98	23						
SYC2MH	CI	768.031	3830.486	Santa Ynez 2 Meter Height	100	100	100		100	86	86	100		100		
SYN	AR	768.609	3832.701	Santa Ynez Airport Stn	100	100	100	100	100							
TABM15MH	PG	616.853	4378.488	Table Mountain 15 Meter Height	100		100		100					100		
TEF	AR	738.372	3879.108	Nipomo Stn (Teft and Pomeroy St.)		100	100									
THM	AR	880.678	3792.969	Thousand Oaks Stn (Moorpark Rd.)	51	51	51	51	51	51	51	51				
THOM	RA	533.387	4411.616	THOMES CREEK	100		100		100	100	100	100		100		
TJP2MH	NO	874.347	3867.686	Tejon Pass 2 Meter Height					76	76	76	76	76	76		
TMR10M	NO	829.136	4090.162	Trimmer 10 Meter Height	76				76	76	76	76	76	76		
TMR2M	NO	829.136	4090.162	Trimmer 2 Meter Height					76	76	76	76	76	76		
TPP	AR	629.13	4177.563	Tracy Stn (24371 Patterson Pass)	48	99	99	48	98							
TREN	RA	858.288	4231.424	TRENCH 1	100		100		100	100	100	100		100		
TRIN	RA	514.105	4502.915	TRINITY CAMP	80		80		79	79	79	79		82		
TRON	AR	1006.838	3972.064	Trona Stn (Athol and Telegraph)	51		51	100	51	51	51	51				
TSM	AR	690.965	4151.219	Turlock Stn (900 S Minaret)	100	49	49	100								
TUOL	RA	823.805	4197.387	TUOLUMNE MEADOWS	98		98		98	98				98		
TW12MH	CI	617.634	4219.408	Twitchell Island 2 Meter Height	97	97	97		97	97	97	97	97			
UHLR	RA	897.694	3970.509	UHL/HOTSPRINGS	99		99		99	99				99		
UNIO2MH	CI	583.686	4161.542	Union City 2 Meter Height	20	20	20		20	20	20	20	20			
VAN2	RA	601.056	4609.939	VAN BREEMER	100		100		100	100	100	100		100		
VAS10MH	PG	613.708	4174.218	Vasco 10 Meter Height	100		100		100					100		
VBS	AR	716.804	3830.442	Vandenberg STS Power Plant Stn	100	30	30	30	100							
VCD10MH	PG	594.476	4251.1	Vacaville/Dixon Stn 10 Meter Height	100		100		100					100		
VCS	AR	832.942	4027.017	Visalia Stn (Church St.)		100	100		100							
VFD	BA	509.093	4239.899	Valley Ford Stn	79	79	79		79	69	69	69		79		
VICT	AR	1020.734	3833.135	Victorville Stn (14306 Park Avenue)	51		51	51		51	51	51				
VIX	AR	823.939	4024.607	Visalia Airport Stn	49	100	100	49	100	100	100	100	100			
VLA2MH	CI	839.196	4023.758	Visalia/CI Americas 2 Meter Height	99	99	100		100	100	100	100		100		
VOTM2MH	CI	543.801	4240.345	Valley of the Moon 2 Meter Height	100	100	100		100	100	100	100		100		
VTA	AR	829.552	3810.686	Ventura Co./W Casitas Pass Stn	98		98		98							
VTE	AR	839.327	3800.27	Ventura Stn (Emma Wood St. BE.)	26	26	26	26	26	26	26	26				
WAA	AR	631.059	4079.038	Watsonville (444 Airport) Stn	100		100	100								
WALK	RA	947.578	3957.833	WALKER PASS	100		100		100	100	100	100		100		
WAR1	RA	908.274	3835.648	WARM SPRINGS	100		100		100	100	100	100		100		
WATS2MH	CI	605.757	4084.234	Watsonville West 2 Meter Height	75	75	75		75	75	75	75		75		
WCM	AR	685.836	4353.918	White Cloud Mtn. Stn	95		95		95	95						
WDC2MH	CI	514.964	4279.742	Windsor 2 Meter Height	95	95	100		100	100	100	100		100		
WEAV	RA	504.644	4509.13	WEAVERVILLE	100		100		100	100	100	100		100		
WFD10MH	NO	705.283	4169.658	Waterford 10 Meter Height	76	25	25							76		
WH12	RA	686.069	4353.935	WHITE CLOUD	71		86		99	99	99	99		99		
WIN2MH	CI	589.161	4261.737	Winters 2 Meter Height	100	100	100		100	85	85	100		100		
WLC2MH	CI	734.083	4057.151	Westlands 2 Meter Height	100	100	100		100	100	100	100		100		
WLW	AR	654.02	4375.897	Willows Stn (E Laurel St.)		100	100		100	100						
WNC2MH	CI	580.695	4196.465	Walnut Creek 2 Meter Height	84	84	100		100	91	91	100		100		
WOLV	RA	885.18	4041.695	WOLVERTON	100		100		100	100				100		
WWOL	RA	794.764	4194.38	WHITE WOLF	95		95		95	95				95		
YAS	AR	619.441	4332.892	Yuba City Stn (Almond St.)		100	100		100							
YOT	AR	790.551	4178.916	Yosemite NP/Turtleback Dome Stn	79	79	92		93	93	93	93				
ZOR2MH	CI	594.817	4295.829	Zamora 2 Meter Height	100	100	100		100	100	100	100		100		